

CATALOG

1975-1976

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Indiana Vocational Technical College is an Equal Opportunity Institution



COLLEGE CALENDAR

Fall Quarter 1975 through Summer Quarter 1977

Fall Quarter, 1975 (58 Academic Days)

September 29	Classes Begin
November 27-28	Thanksgiving Holidays
December 8	Pre-Registration for Winter Quarter Begins
December 19	Classes End

Winter Quarter, 1975-76 (55 Academic Days)

December 20	Winter Vacation Begins
January 4	Winter Vacation Ends
January 5	Classes Begin
March 8	Pre-Registration for Spring Quarter Begins
March 19	Classes End

Spring Quarter, 1976 (54 Academic Days)

March 22	Classes Begin
May 24	Pre-Registration for Summer Quarter Begins
May 31	Memorial Day Holiday
June 4	Classes End
June 5	Summer Vacation Begins
June 20	Summer Vacation Ends

Summer Quarter, 1976 (54 Academic Days)

June 21	Classes Begin
July 5	Independence Day Holiday
August 23	Pre-Registration for Fall Quarter Begins
September 3	Classes End

Fall Quarter, 1976 (54 Academic Days)

September 6	Labor Day Holiday
September 7	Classes Begin
November 8	Pre-Registration for Winter Quarter Begins
November 19	Classes End

Winter Quarter, 1976-77 (58 Academic Days)

November 22	Classes Begin
November 25-26	Thanksgiving Holidays
December 18	Winter Vacation Begins
January 2	Winter Vacation Ends
February 14	Pre-Registration for Spring Quarter Begins
February 25	Classes End

Spring Quarter, 1977 (60 Academic Days)

February 28	Classes Begin
May 9	Pre-Registration for Summer Quarter Begins
May 20	Classes End

Summer Quarter, 1977 (58 Academic Days)

May 23	Classes Begin
May 30	Memorial Day Holiday
July 4	Independence Day Holiday
August 1	Pre-Registration for Fall Quarter Begins
August 12	Classes End
August 13	Summer Vacation Begins
August 28	Summer Vacation Ends

NOTE: Registration for any given quarter will be accepted at any time during the preceding quarter. Late registration for any quarter will be accepted during the first week of classes in that quarter.

TABLE OF CONTENTS

	<i>Page</i>		<i>Page</i>
Official College Calendar	ii	Interior Design Technology	51
Table of Contents	iii	Library Resource Aide	53
Regional Institute Locations	iv	Printing Technology	55
Chairman's Message	1	Health Occupations Division	59-86
The College	2	Child Care Technology	59
General Information for the Student	3-10	Clinical Laboratory Technology	61
Admission Requirements and Procedures	3	Culinary Arts Careers	63
Transfer Credit	3	Dental Assistant	67
College Fees	3-4	Emergency Care Technician	69
Financial Aid	4-6	Medical Assistant	71
Instructional Policies	6-7	Obstetrical Technician	75
Placement	7	Operating Room Technician	77
Housing	7	Practical Nursing	79
Student Organizations	7-8	Radiologic Technology	81
General Information	8	Respiratory Therapy	85
Faculty	9	Trade and Technical Division	87-126
Affiliation	9	Agricultural Equipment Technology	87
Counseling Service	9	Applied Fire Science Technology	91
Graduation Requirements for		Automotive Body Repair Technology	93
Degree Credit Programs	9	Automotive Service Technology	95
Disciplinary Dismissal	10	Building Construction Technology	99
Conduct	10	Cable Television Technology	101
The Curricula	11-126	Diesel Power Technology	103
Divisional Structure	14	Drafting Technologies	105
Program Descriptions	15-126	Electronic Technologies	109
Business Division Programs	15-44	Heating, Air-Conditioning and	
Accounting Technology	15	Refrigeration Technology	113
Business Management Technology	19	Industrial Maintenance Technology	117
Computer Programming	21	Machine Tool Technology	119
Hotel-Motel Management Technology	25	Pollution Treatment Technology	123
Industrial Management Technology	27	Welding Technology	125
Marketing Technology	31	Community Services and Continuing Education	127
Secretarial-Administrative	35	Apprenticeship Programs	129
Secretarial-Legal	39	College Personnel	131-149
Secretarial-Medical	41	State Board of Trustees	131
Social Service Technology	43	Regional Boards of Trustees	131-133
Graphics and Media	45-57	Staff and Faculty	133-149
Commercial Art Technology	45	Ivy Tech Alumni Association	151
Commercial and Industrial Photography	49	Index	152-153

INDIANA VOCATIONAL TECHNICAL COLLEGE

Regional Offices

NORTHWEST — REGION 1

Indiana Vocational Technical College
1440 East 35th Avenue
Gary, Indiana 46409
Phone 219 / 887-9646

SOUTH BEND — REGION 2

Indiana Vocational Technical College
1534 West Sample Street
South Bend, Indiana 46619
Phone 219 / 289-7001

FORT WAYNE — REGION 3

Indiana Vocational Technical College
1711 Maumee Avenue
Fort Wayne, Indiana 46803
Phone 219 / 423-3573

LAFAYETTE — REGION 4

Indiana Vocational Technical College
616 Wabash Avenue
Lafayette, Indiana 47905
Phone 317 / 423-1533

KOKOMO — REGION 5

Indiana Vocational Technical College
3717 South Reed Road
Kokomo, Indiana 46901
Phone 317 / 453-5880

MUNCIE — REGION 6

Indiana Vocational Technical College
4100 Cowan Road, P. O. Box 3100
Muncie, Indiana 47302
Phone 317 / 289-2291

TERRE HAUTE — REGION 7

Indiana Vocational Technical College
Rural Route 22, Box 760
Terre Haute, Indiana 47802
Phone 812 / 299-1121

INDIANAPOLIS — REGION 8

Indiana Vocational Technical College
1315 East Washington Street
Indianapolis, Indiana 46202
Phone 317 / 635-6100

RICHMOND — REGION 9

Indiana Vocational Technical College
P.O. Box 1145
Richmond, Indiana 47374
Phone 317 / 966-5944

COLUMBUS — REGION 10

Indiana Vocational Technical College
646 Franklin Street
Columbus, Indiana 47201
Phone 812 / 372-9925

MADISON — REGION 11

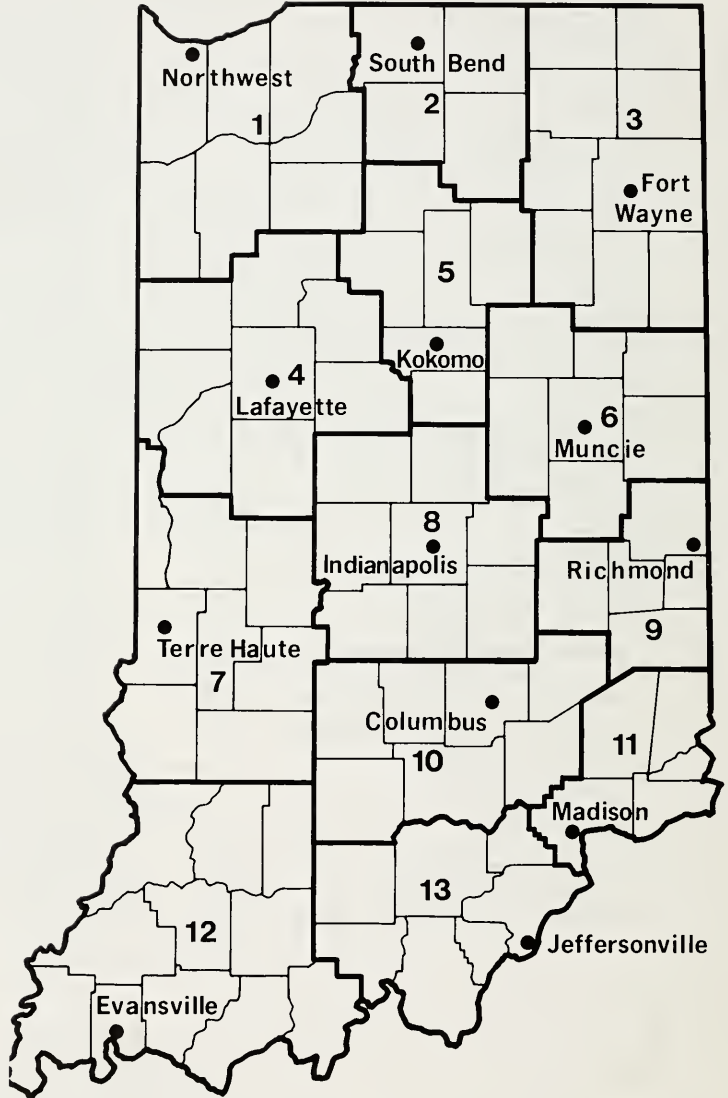
Indiana Vocational Technical College
First and Broadway, P. O. Box 434
Madison, Indiana 47250
Phone 812 / 265-2580

EVANSVILLE — REGION 12

Indiana Vocational Technical College
3501 First Avenue, P. O. Box 3199
Evansville, Indiana 47731
Phone 812 / 426-2865

JEFFERSONVILLE — REGION 13

Indiana Vocational Technical College
510 Spring Street
Jeffersonville, Indiana 47130
Phone 812 / 288-6607



MESSAGE FROM THE CHAIRMAN

When the Indiana General Assembly created Indiana Vocational Technical College in 1963, it recognized the rapidly growing need for vocational and technical training opportunities for the young men and women of Indiana. It also recognized the importance of vocational and technical training to the total economy of the State. Business, industry and agriculture needed employees qualified in skills that were not being taught in our State's higher educational system.

In 1963, Ivy Tech was only an educational concept. Today, in 1975, 19,000 young men and women are enrolled in the thirteen IVTC Regional Institutes located throughout Indiana.

Ivy Tech students come from all walks of life and their educational backgrounds cover a very broad spectrum. Some have only a year or two of high school; some are college graduates. Some are employed; some are not. However, they all have a common goal . . . the development of a skill or a trade which will enable them to be more productive and more successful in our competitive society.

Entrance requirements for Ivy Tech are flexible enough to enable anyone with a desire to compete at his or her own level of training. The curriculum is adjustable to the needs of the individual student. It is structured so as not to make any student uncomfortable or non-competitive.

Just as other state-supported institutions of higher education, Ivy Tech receives financial assistance from the State. Student fees also provide part of the operating costs of the College.

If you have any questions regarding the educational opportunities available to you at Ivy Tech, I would urge you to write or visit any of our thirteen Regional Institutes. In the back of this catalog you will find the thirteen institutes listed and the names of their directors. These directors or members of their regional staff will be pleased to counsel with you on your personal objectives and explain what Ivy Tech programs are available to help you.

MAURICE J. FERRITER
Chairman
Board of Trustees

THE COLLEGE

Indiana Vocational Technical College believes that each individual, regardless of economic or social status, should be provided the opportunity to develop to his and society's ultimate benefit.

The College believes that post-secondary occupational education is an increasing necessity for an ever-growing portion of the citizens of Indiana. IVTC demonstrates the intent of the General Assembly of the State of Indiana by providing occupational education through a coordinated system of regional institutes, located throughout the state.

Indiana Vocational Technical College believes in technical and related education integrated as necessary throughout the occupational curriculum to enable students to develop self-awareness and social responsibility to successfully compete in a chosen occupational field.

The College believes in directing its programming to serve the needs of the individual within his community as well as the needs of the community as a whole.

From this philosophical base, the following objectives are established for the Indiana Vocational Technical College system:

1. Consistent with the manpower needs of the State of Indiana, the College will offer relevant occupationally oriented post-secondary education and training to develop its students to the desired level of competence.
2. The College will offer occupationally oriented continuing education and training consistent with the identified needs of interested groups in the State of Indiana.
3. Consistent with the individual student's interest, needs, and abilities, the College will offer in a wide range of meaningful occupationally

oriented programs multiple entry and exit opportunities in a continuum of education and training for each of its regions.

4. The College will strive to provide the opportunity for citizens of the State to gain occupational competence regardless of their financial resources, previous educational experiences or geographic location.
5. The College will provide the opportunity for each applicant to gain occupational competence regardless of age, race, sex or religious affiliation.
6. The College will encourage throughout the State of Indiana the development of understanding, acceptance, and support for occupationally oriented education and training and will communicate the valuable contribution it makes to the individual, community, State, and the Nation.
7. The College will prudently utilize all its resources to carry out its legislatively-mandated mission in an accountable manner.
8. The College will provide within each program offering, educational and training experiences supportive of the social, cultural, and personal development of the individual designed to enhance the opportunities for obtaining and retaining gainful employment.
9. The College will cooperate and strive for coordination among all providers of occupationally oriented training and education in all educational sectors, as appropriate.
10. The College will continue to develop a dynamic and flexible delivery system capable of adapting its offerings to meet the changing technological and socio-economic needs of the community, State and Nation.

THE STUDENT

ADMISSION REQUIREMENTS AND PROCEDURES

Campus Visits

Visits to regional institutes are encouraged. It is recommended that the interested student visit the prospective facility before an application is filed.

College Year

The college year consists of 12 months divided into four quarters. It is possible to enter some programs at the beginning of each quarter. Most programs start in September.

Admission Policy

The College has an "open door" admission policy for citizens of the State of Indiana. The College provides for admission of any person regardless of sex, race, creed or national origin, in accordance with Title VI, Civil Rights Acts of 1964. Citizens of other states may be admitted provided that they pay tuition in addition to the general fees charged Indiana residents, and that they do not displace an Indiana citizen.

The College also defines "open door" admission to mean that the doors of the College are open to all above the usual high school age and to those who have permanently withdrawn from high school and are above 16 years of age. The College reserves the right to suggest the program and course of study that best meets the student's objectives and needs.

General Admission Requirements

To be admitted to the College, a student must meet one of the following criteria:

1. Be a graduate of high school, or
2. Have successfully completed a high school equivalency examination, or
3. Have demonstrated an interest in and need for post-secondary occupational education as offered by the College.

To obtain full-time standing, the student must have on file in the regional institute of his choice a completed application and, when the selected program requires, should have a completed health examination form signed by his physician.

At the option of the student who wishes assistance in making his selection of career training, the College offers to each full-time student the Comparative Guidance and Placement test administered by the College. A fee of \$5 is charged to cover the cost of the test. The focus of C.G.P. program is the guidance of students, not selection for admission. Its purposes are:

- to help students examine their interests and abilities in relation to the educational options open to them, so they can make informed plans for their careers and courses.
- to provide the counselor or faculty advisor with a profile of each student as an individual so the counselor can help him plan an appropriate program.
- to analyze the student body, and groups within it, enabling the College to plan programs to meet the needs of its students.

Skill testing will occur to identify each student's needs and to assist him in planning courses.

Entrance Procedure for Full-Time Students

1. Contact the selected regional institute for official application forms.
2. Complete the forms and return them to the chosen regional institute Office of Student Services.
3. Provide an official transcript of his high school record to the regional institute. Official transcripts from any college or other post-secondary high school institution previously attended must also be sent to the regional institute.
4. Opportunity to take Comparative Guidance and Placement test.
5. Provide evidence of a recent physical examination from family physician when required.
6. Make arrangements for paying the fees due at time of official registration. Contact the Office of Student Services if you need assistance.

TRANSFER CREDIT

Transfer students must meet the general admission requirements of the College.

A student may be admitted from other recognized colleges and universities with such transfer credits as his previous record may warrant insofar as his credits fit the program of studies chosen at Indiana Vocational Technical College. Such students must have an official transcript sent directly from the previous institution attended. The College reserves the right either to refuse admission or conditionally accept students who have been dismissed from other colleges or universities for disciplinary reasons.

COLLEGE FEES

The College seeks to provide quality training at the lowest possible cost. As a state assisted educational

institution, fees paid by the student cover only a minor part of the operating costs of the College. No tuition is charged students who are residents of the State of Indiana. All out-of-state students are required to pay a tuition fee in addition to the General Service Fee.

SCHEDULE OF FEES (Per Quarter)

In-State Students

Full-time (12 credits or more)	
General Fee	\$ 120
Ancillary Fee	27
Student Activity Fee (*) Maximum	3
Part-time (Fewer than 12 credits)	
General Fee per credit	\$10.00
Ancillary Fee per credit	2.25
Student Activity Fee per credit (*)	
Maximum25

Out-of-State Students

Full-time (12 credits or more)	
Tuition	\$ 120
General Fee'	120
Ancillary Fee	27
Student Activity Fee (*) Maximum	3
Part-time (Fewer than 12 credits)	
Tuition per credit	\$10.00
General Fee per credit	10.00
Ancillary Fee per credit	2.25
Student Activity Fee per credit (*)	
Maximum25

(*) Actual Activity Fee will be at the discretion of the Regional Board of Trustees, but will not exceed the maximums indicated above.

Laboratory and expendable-supply fees, where applicable, are additional to the fees listed above.

Refund of Fees — Non Veteran

Refund policies for degree credit courses of the College, as specified below, pertain to all monies collected toward registration of the student.

Official Withdrawal From College

First Week — If a registered student withdraws after registration, but before the end of the first week of classes, the College will retain \$20 and refund all other fees paid.

Second Week — If a student withdraws during the second week of classes, the College will retain 50% of total fees assessed or \$20.00, whichever is larger, and refund all other fees paid.

Thereafter — No refunds will be made.

Upon official withdrawal from the College within the two-week refund period, deferred fees will be cancelled.

Partial Withdrawal From Individual Courses

First Week or Until Late Registration Ends (whichever is later) — 100% of fees assessed and paid attributable to the course being dropped will be refunded.

Thereafter — No refunds will be made.

Summary Schedule of Refunds

	Refund for Complete Withdrawal	Refund for Partial Withdrawal
From registration until the end of the first week of classes, or until late registration ends	All but \$20.00 of any fees collected	100%
Until the end of the second week of classes	All except 50% of fees assessed or \$20.00, whichever is larger.	None
Thereafter	None	None

The effective date for calculation of the refund will be the date that the written notification for official withdrawal is filed in the Office of Student Services.

Ancillary Service Fees

This fee may be assessed to cover the cost of such services as facilities development, health services, and replacement of library learning resources materials used up by the student.

Laboratory Fees

Laboratory fees cover the cost of replacement of expendable supplies used in instruction.

Graduation Fee

A student making known at the beginning of his final quarter his intent to graduate will be charged a fee of \$10.

FINANCIAL AID

The College recognizes that many students may need financial assistance if they are to achieve their educational objectives. Therefore, it is the policy of the College to aid as many qualified students who have demonstrated need as possible.

The Financial Aid Officer in the Office of Student Services administers many student aid programs. The College draws financial resources chiefly from three sources: the institution itself, the state, and the federal governments. To assist in the equitable distribution of these resources and to comply with governmental regulations the College uses an objective need analysis system operated by the College Scholarship Service (CSS). The College subscribes to the principle that

financial aid is awarded to students on the basis of their individual need. CSS provides a confidential statement (the Parents' Confidential Statement for dependent students; the Student's Financial Statement for independent students) to help the College assess the financial strength of the student and his family. On the basis of the data supplied by the PCS or SFS, the Financial Aid Officer can evaluate the amount of financial aid needed to meet the students' need and the kinds of aid that can be offered.

The kinds or types of financial aid fall into three general categories: (1) scholarships and grants, (2) loans, (3) part-time employment. Usually a student is offered assistance from more than one kind of aid so that in meeting a student's need the Financial Aid Officer prepares a "financial aid package". This approach insures that no student will be unduly burdened with a loan and/or work, and that scholarship and grant funds will be distributed equitably.

The College participates in the following types of financial aid programs. For further information contact the Financial Aid Officer in the Office of Student Services.

SCHOLARSHIPS, GRANTS

Institutional Awards

A variety of grants are available through the College. In many cases these are highly individualized because of the source of funds or purpose of the award. The amount of these awards varies in each regional institute.

State Scholarships and Grants

The State Scholarship Commission of Indiana (SSCI) administers two state-wide programs. Hoosier Scholars are selected on the basis of their academic achievement and financial need; Educational Grants are awarded on the basis of financial need alone. A single, unified application for both the state scholarship and the state grant programs must be filed by December 1 of the year preceding enrollment in the Fall Quarter. The SSCI requires the PCS/SFS for both programs; the confidential statement must be filed by January 15. Students applying for a state scholarship must take the Scholastic Aptitude Test (SAT) in November prior to enrollment the following Fall Quarter. The SAT is not required for the state grant program.

Child of Disabled Veteran

Children of veterans with a service connected disability or death may qualify for the waiver of certain institutional fees. Eligibility for this aid must be certified by the Veterans Administration.

Police and Fireman Orphan

Children of regular paid law enforcement officers, and firemen killed in the line of duty may qualify for the waiver of certain institutional fees. This fee waiver

is applicable only to full-time students under the age of 23. Eligibility for this aid must be certified by the appropriate agencies.

Federal Grants

Basic Educational Opportunity Grants (BEOG) provide assistance to full-time students with demonstrated financial need who are enrolled in an eligible institution. Applicants must be enrolling in college or a post-secondary program for the first time since April 1, 1973.

Supplemental Educational Opportunity Grants (SEOG) Program is designed to provide federal assistance to exceptionally needy students. SEOG awards may range from \$200 to \$1500 per year, but may not exceed 50% of the students' need. The College must match the amount of the SEOG with other forms of acceptable aid, usually other scholarships, grants, or part-time employment.

LOANS

Federally Insured Student Loans

This program is conducted through local lending institutions — banks, savings and loan associations, credit unions, etc. If the adjusted income (after taxes) of the student and his family is under \$15,000 per year, the Federal Government will pay the interest on the loan while the student is in school. If the student qualifies for the federal interest subsidy, he may borrow up to \$2,000 a year. After he leaves school, he assumes repayment of the loan and the maximum interest charged to the borrower cannot exceed 7%.

Other Loans

Small, short-term, emergency loans which are interest-free are available through the Ivy Tech Foundation and/or the regional institutes. These limited monies are intended to cover unanticipated expenses which may occur at the time of registration or during the term. They are negotiated through the Office of Student Services.

PART-TIME EMPLOYMENT

College Work-Study Program

Students with demonstrated financial need may qualify for this federal work-study program. Eligible students may be employed part-time during the time they are attending class and full-time in vacation periods. Work-study jobs may be on campus and also in any public or non-profit agency in the community. The hours per week and the pay rate is determined by the College in relation to the individual student's need. Whenever possible students are offered Work-Study opportunities in areas related to their career objectives.

Other Employment

The College makes every effort to develop and maintain a list of job opportunities in the community. Information about employment in the area is available in the Office of Student Services of each regional institute.

OTHER TYPES OF FINANCIAL AID

Veterans Benefits — Students with records of military service may apply for a certificate of eligibility from the regional office of the Veterans Administration. Monthly V.A. benefits may be used at all regional institutes of the College. Applications for these benefits should be made at least 30 days in advance of the date the student plans to enroll.

Other educational benefits are extended to orphans of veterans and the vocational rehabilitation of veterans. These programs are administered by the regional office of the Veterans' Administration.

Social Security Benefits

Monthly social security benefits may be available to a student when one or both parents receive social security disability or retirement benefits or when a parent covered by social security dies. Educational benefits may be extended to eligible students up to the age of 22. Eligibility is determined by the Social Security Administration.

Comprehensive Employment Training Act (CETA)

Students from economically disadvantaged backgrounds may apply for assistance under the Comprehensive Employment Training Act. Eligibility is determined by CETA Program officials. The local office of the Indiana Employment Security Division may provide further information on CETA sponsorship.

Vocational Rehabilitation

Any student who has a disability which may be considered a handicap to employment may qualify for monthly benefits through the Indiana State Board of Vocational Rehabilitation. Conditions of eligibility are established by Vocational Rehabilitation and awards based on individual needs are made by the local office of Vocational Rehabilitation.

For more detailed information about any of the financial aid programs described in this section, contact the Office of Student Services.

INSTRUCTIONAL POLICIES

Attendance

Attendance at scheduled class meetings or other activities assigned as part of a course of instruction is essential for the student to effectively achieve his or her instructional objectives. Accordingly, instructors

are responsible to maintain records of attendance and to excuse students for bona fide reasons.

It is recognized that occasional personal circumstances may arise which render it impossible for students to attend scheduled classes and activities. Whenever such circumstances occur, it is expected that students will confer with instructors to obtain authorization for absence. Such advance notification enables the instructor to offer the student an opportunity of making-up the material missed. In the case of unforeseen circumstances, students should also consult with their instructors in order to arrange for class make-up. Excused absences consist of personal illness and any reasonable family, occupational or other circumstance. Unexcused absences are those which normally cannot be justified by any logical reason.

Whenever a student has five consecutive unexcused absences of a scheduled class or activity or ten consecutive hours (whichever comes first), the instructor will make a reasonable effort to determine whether the student intends to return to class. Based upon the information acquired by the instructor, the instructor will determine whether the student has voluntarily withdrawn from class or whether the student should be assigned an Involuntary Withdrawal and considered no longer enrolled.

Any student seeking re-enrollment in subsequent quarters who has previously been withdrawn from a course because of unexcused absence will be counseled to determine that the reasons for such unexcused absence have been alleviated. If such reasons have not been alleviated, the student will be offered assistance in solving such problems prior to being re-enrolled.

College Credit

College credit is that credit described in quarter hours and awarded at the completion of a course. College credit is used in determining the student's cumulative grade point index for certificate and/or degree programs. Institutional credit is that credit which is used to indicate student progress in non-degree courses.

Quarter Hour

The quarter hour is defined as the credit level for a course. It is based on the demands of the Learning Situation and the number of contact hours per week required to achieve a specific academic level.

Matriculated Student

A student is considered to be matriculated when: (1) an intention has been stated to pursue a certificate or degree in a program; (2) admission requirements have been met and (3) had an advisor assigned.

Normal Load

A normal student load is determined by dividing the credits required for graduation in the program by the

number of quarters normally required for graduation. Full time status is considered to be 12 credits per quarter.

Maximum Load

Twenty credits per quarter is considered a maximum load.

Quality Point

A "quality point" is a numerical value assigned to the grade a student receives in a credit course in order to provide a quantitative determination of the student's scholarship. Used in computing cumulative grade point index, quality points are calculated to three decimals and rounded out to two decimals.

Cumulative Grade Point Index

The "cumulative grade point index" is a measure of a student's scholastic success obtained by dividing the total number of quality points earned by the total number of degree credits attempted.

Final Examination

A final examination may be required for the completion of a course and for the receipt of a passing grade. Absences from scheduled final examinations, with the privilege of a make-up examination, must be arranged with the instructor.

Grading

It is the policy of the College to use grades to report student progress in and/or completion of a credit course. Student performance in courses is indicated by one of the following grades:

GRADE	QUALITY	QUALITY POINTS
A	Superior	4
B	Above Average	3
C	Average-Passing	2
D	Below Average	1
Status		
IP	In-Progress (applicable only to Individualized Courses)	not computed
I	Incomplete	not computed
W	Withdrawal (includes both voluntary and involuntary withdrawals)	not computed
S	Advanced standing credit by examination or evaluation	not computed
AU	Audit (students who audit courses pay the same fees as students who take the course for credit)	not computed

"Not computed" indicates that the grade is not used in computing the student's cumulative index.

Mid-Quarter Deficiencies

Informal reports of a mid-quarter deficiency may be issued by the regional institute to all students in degree credit courses doing unsatisfactory work.

Withdrawal

Withdrawal from a course may occur at the request of a student and be considered voluntary. Withdrawal may also occur because of a student's excessive absence or inability to complete a course in which case the withdrawal would be considered involuntary.

PLACEMENT

The College believes assistance in placement of graduates is an integral function of the College. In recognition of this concept a state-wide placement office has been established as a service of the College to its graduates. This service includes:

1. Coordination of regional institute activities for placement.
2. Implementation of a system for state-wide notification of known employment opportunities.
3. Correlation of graduate career intentions with industrial and business needs for employees.

Employment opportunities known to the College Placement Office are available to all students who have registered with the Office for assistance. Any student registered with the Placement Office will have the opportunity to be interviewed by any prospective employer. Employers registering with the Office will be provided the names of all qualified candidates for employment without regard to sex, race, age, or national origin.

HOUSING

Indiana Vocational Technical College does not have dormitories available for students. Out-of-town students needing accommodations should contact the regional institute's Office of Student Services for information regarding locally available housing.

STUDENT ORGANIZATIONS

It is the philosophy of the College that co-curricular activities complement the academic program of the institution. Students are encouraged to participate in all phases of the student activities program when such participation is consistent with sound educational practices.

All organizations must operate under the policies and guidelines as set for the institution by the Board of Trustees. No organizations will be permitted to function in College facilities without the approval of the administration and the student senate. All approved organizations must be open to all eligible candidates for membership. Each organization must make available to the student senate all records of officers, membership, and financial transactions of the group.

Student Senate

Students, with the desire to establish a system of participation in the student government and to increase the spirit and reputation of the College, have developed student senates.

Student senates are vested with authority to legislate on subjects concerning student affairs, unless regulation has been otherwise delegated, subject to the approval of the appropriate administrative office.

Constitutions of all student organizations must be approved by a simple majority of a quorum. A quorum in this section shall be defined as a simple majority of the total membership and one faculty advisor.

Membership on the student senates normally is comprised of one representative from each class and the president of each recognized school club and organization. A representative must be a member of the class or organization from which the representative is chosen.

Committee on Student Status

A committee of three regional institute faculty members and the president of the student senate, who serves for one calendar year, will make recommendations relating to disciplinary or academic status of students.

Class Organizations

Each class, first year and second year, may organize by the election of class president, vice-president, secretary-treasurer, class reporter, and the at-large representatives for the student senate. Class organizations will be under the sponsorship of the student senate and their primary purpose is for class-wide social activities and sports functions. The election of class officers will occur during the first three weeks of a full quarter. Each class will have a faculty advisor.

Clubs

Hobby, social, or interest clubs may be organized and must be chartered by the student senate. Clubs must have the following elected officers: president, vice-president, secretary-treasurer, club reporter, and a representative to the student senate. All clubs will have a faculty advisor. The student senate will determine if sufficient interest exists to form or to continue a club.

Intramural Sports

Sport activities of the College consist only of intramural sports sponsored by the student senate. Leagues may be formed where the interests of the students justify their organization.

Social Activities

All group activities of the College must be approved and sponsored by the student senate and the adminis-

tration. Classes, clubs, and other groups are encouraged to plan and conduct social activities for their members. The student senate will organize and conduct school-wide social activities and gatherings. All students are encouraged to participate in these activities and many of them will be open for the students' guests.

Professional and Trade Societies

Student chapters of the various societies will be formed on the same basis and under the same requirements as other student organizations.

GENERAL INFORMATION

Financial Responsibility

Satisfactory financial arrangements with the College must be completed before a student may complete registration. If financial obligations are not satisfied by the end of the quarter, the College reserves the right to withhold grade reports. College transcripts will not be issued until all financial obligations are paid in full.

Bookstore

A bookstore is maintained to make available the books and supplies needed by students. The bookstore will be open throughout the academic year.

All books and regular supplies needed for training will be offered for sale at the bookstore. When special supplies are needed which are specifically related to laboratory requirements in a curriculum, they will be provided as part of the laboratory fee.

Lost and Found

A lost and found service is normally maintained in the bookstore, and all lost or found articles should be handled at that location.

College Colors

The College colors are blue and gold.

Office Hours

Except for Saturdays, Sundays, and holidays, the offices of the College are open from 8 A.M. to 5 P.M.

Personal Property

The College cannot be responsible for personal property. Students should mark or identify each item of personal property for their own protection.

Messages

The College office cannot accept or deliver personal messages or telephone calls for students except in case of extreme emergency.

FACULTY

A quality faculty serves at each regional institute. In faculty selection, considerable emphasis is placed on actual experience in the areas of technical specialization as well as in academic achievement. Primary consideration is placed on the instructor's ability to convey knowledge. Faculty members are expected to maintain their professional status by keeping informed on current trends in their fields.

AFFILIATION

Indiana Vocational Technical College is a member of the Indiana Conference for Higher Education, the American Association of Community and Junior Colleges, the Indiana Association of College Admissions Counselors, and the Indiana Student Financial Aid Association.

The College is approved for the education of veterans and orphans of deceased veterans who are eligible for educational benefits. The College is endorsed by the Rehabilitation Division of the State of Indiana.

Courses of study and curricula for each occupational area of concentration are approved where applicable by appropriate certifying agencies, as well as by business, labor and industrial organizations.

Eight of Indiana Vocational Technical College's regional institutes have achieved Candidate for Accreditation status with the North Central Association of Colleges and Secondary Schools.

Additional information may be obtained from the Office of Student Services at each regional institute.

COUNSELING SERVICE

Counseling services are available at each regional institute. These services include educational and vocational aptitude tests for students. Counselors will also help acquaint students with community and state agencies and other resources which may be useful to the students.

The College encourages close cooperation between student and teacher and grants each student the freedom to contact his teacher, department head, counselor, or director at any time.

GRADUATION REQUIREMENTS FOR DEGREE CREDIT PROGRAMS

It is the policy of the College to award the degree of Associate in Applied Sciences or the appropriate Certificate to those students who have met the graduation requirements listed below. Graduation ceremonies will be held at least once a year. Attendance at graduation is encouraged.

Requirements for Graduation

To graduate with an Associate Degree the student must:

1. Earn a minimum of 90 degree credits. The last 15 credits must be earned at the College.
2. Have satisfactorily completed all course work and received a terminal grade.
3. Complete an approved curriculum and (1) be a high school graduate, or (2) have successfully completed a high school equivalency examination.
4. Must have satisfied all financial obligations due the College.
5. The student must file a notice of "intent to graduate" with the regional institute Office of Student Services at the beginning of the quarter in which the student intends to graduate.
6. Associate Degree students are encouraged to attend graduation ceremonies.
7. Have received a grade of "D" for no more than 10% of the credits earned. If the 10% limit is exceeded, the student's academic standing must be reviewed by the Faculty Committee on Scholarship and Standards to assess any deficiency condition and validate the student's record for graduation.

To graduate with a Technical Certificate the student must:

1. Have earned a minimum of 45 degree credits.
2. Have satisfactorily completed all course work and received a terminal grade.
3. Complete an approved curriculum.
4. Have satisfied all financial obligations due the College.
5. Have received a grade of "D" for no more than 10% of the credits earned. If the 10% limit is exceeded, the student's academic standing must be reviewed by the Faculty Committee on Scholarship and Standards to assess any deficiency condition and validate the student's record for graduation.

To graduate with a Certificate of Proficiency the student must:

1. Have earned a minimum of 14 degree credits.
2. Have satisfactorily completed all course work and received a terminal grade.
3. Complete an approved curriculum.
4. Have satisfied all financial obligations due the College.
5. Have received a grade of "D" for no more than 10% of the credits earned. If the 10% limit is exceeded, the student's academic standing must be reviewed by the Faculty Committee on Scholarship and Standards to assess any deficiency condition and validate the student's record for graduation.

DISCIPLINARY DISMISSAL

An instructor, through the regional director, may, at any time, recommend that a student be withdrawn from a course for disciplinary reasons. A student recommended for dismissal will be notified by his advisor and will be given an opportunity to discuss the matter with the Student Status Committee before final action is taken. Disciplinary dismissals from the College will be at the discretion of the regional director.

Any non-veteran student who is dismissed for disciplinary reasons shall not be entitled to a refund.

CONDUCT

College students are considered to be mature. Their conduct, both in school and out, is expected to be dignified and honorable. The responsibility for success rests largely with the individual student.

The College has few rules of conduct. On the contrary, it is expected that students will consider they are living in a democratic situation and that the reputation of their college rests with them. Common courtesy and cooperation at all times make conduct rules unnecessary.

The following resolution has been adopted by the College Board of Trustees:

"WHEREAS the mission of Indiana Vocational Technical College is to teach, conduct research and serve the public through the proper use of its facilities and personnel, and irresponsible acts of individuals may militate against the effective accomplishments of the College; and

"WHEREAS the unreasoning acts of a few, whether they be students, faculty members, or outsiders not connected with the College, likewise militate against the effective pursuit of education by a student; and

"WHEREAS the spirit of protest and independence that is normal in students has in the present time been evidenced by excessive opposition to established principles of law and order, by abuse of personal freedoms,

by misuse of the basic rights of free speech and by the use of displays of force;

"The Board of Trustees of Indiana Vocational Technical College hereby resolves:

"That all basic rights of free speech and independent action of individual citizens will be preserved so long as any exercise of such rights does not infringe upon the freedoms and rights of others.

"That any grievance presented in a calm and reasonable manner will be given fair and thorough consideration by the respective administrations, including Regional Boards of Trustees, and just and impartial answer will be returned with the minimum delay.

"HOWEVER, any person, student, faculty member, or employee of the College who takes part in any activity which interferes with other persons' lawful use of the property of Indiana Vocational Technical College and regional institutes, or who performs in such manner as to have the effect of denying or interfering with the lawful use of such property by others, will be requested to leave the premises of the College or its Regional Institutions, and

"If any person, student, faculty member or employee of the College refuses to leave the premises of any property of the College, when so requested regardless of reason, by any duly constituted official of Indiana Vocational Technical College including its regional institutions, then proper law enforcement officials will be requested to arrest such persons as trespassers, and such persons will be subject to such disciplinary action by the College as the proper officials deem reasonable, including expulsion and/or termination of benefits and rights.

"If any person or property is in danger of harm from any activities such as described above, that law enforcement officials will be requested to arrest such offenders and remove them from the premises.

"This Resolution is hereby adopted and made a matter of corporate record, this 31st day of March, 1969."

THE CURRICULA

The College offers a wide variety of learning opportunities to all who seek instruction or training. These opportunities for learning are organized into two major program activities:

1. **Degree Credit Programs:** Offered by four major divisions: BUSINESS SCIENCES, GRAPHICS AND MEDIA, HEALTH OCCUPATIONS, AND TRADE AND TECHNICAL. These programs provide the specialized skill development and training so necessary for employment, career advancement, and ultimate success in today's complex society.
2. **Community Service Programs and Courses:** These offerings while not leading to a degree or technical certificate, do carry institutional-credit and are designed to meet the specialized and periodic training needs of local business and industry. In addition, a broad range of skills advancement courses are available to meet the continuing education needs of the local community.

CURRICULA DEVELOPMENT

The outlines and descriptions of the curricula as indicated in this catalog are an accurate presentation of their status at the time of publication. However, variations may occur in both course content and program sequence, as a result of the constant effort to maintain occupational relevance in all programs.

THE CONTINUUM

In today's fast-paced technological society constant change has become the rule rather than the exception. New Methods, materials, and indeed, entire new career fields are constantly evolving and expanding.

As a result any training institution, which has as its primary goal occupational training and career development, cannot remain static in either its program offerings, or the content of its courses. For this reason, the College is continually revising and updating its curricula to meet the ever-changing needs of our state's employers and citizens.

The College's unique curriculum is designed around the continuum, or "career ladder concept." The students may begin training at their present level and continue to study a chosen career field until reaching a personal employment objective. Although many of these continuums lead to the Associate Degree, the student may take advantage of the many career opportunities the training will have provided by taking employment when ready to do so.

The concept of the continuum is that of becoming a completely, "student-oriented" institution where it is necessary to assess the characteristics of all prospective full time students prior to their enrollment. Each full time applicant is encouraged to take a battery of tests prior to enrollment. The information gathered will

provide sufficient knowledge to enable counselors and advisors to assist each student in planning an appropriate program. The purpose of this testing program is for guidance, not selection for admission.

Students will be placed in courses appropriate to their capabilities and career objectives.

The College provides a wide range of programs in a continuum of education spanning from the Advancement Studies level through the Associate Degree level.

CURRICULA ADVISORY COMMITTEES

The curricula are developed with the assistance and advice of regional employers. Through advisory committees composed of representatives of the various employers, the College is kept informed of the needs of such employers, the training, job opportunities and the performance standards needed.

Advisory committees represent business, industry, labor, commerce, agriculture and government institutions.

These committees insure that programs presented by the College equip graduates with employable skills.

CURRICULA STRUCTURE

The College curricula are structured into programs. Each program represents a continuum as discussed above. The curricula structure for each program reflects the courses that comprise the program. Schedules of course offerings are developed and published quarterly by each Regional Institute. These schedules show the courses to be offered and the times and places they are to be offered.

PART-TIME PROGRAMS

Most of the programs and courses of the College, both degree credit and institutional credit, are also offered on a part-time basis. Part-time programs have the same credit requirements as the regular full-time programs, and follow the College calendar for registration, holidays and vacations. However, contact hours per week and individual class schedules are specifically arranged by each regional institute to accommodate the special needs of employed students. Normally, courses as reflected in this catalog are divided into two equal parts for part-time delivery.

G.E.D. TESTING

The thirteen regional institutes of Indiana Vocation Technical College have been designated General Education Development (GED) testing centers by the Indiana Department of Public Instruction.

Students scoring sufficiently high on the test qualify for a high school diploma either from their old high school or from the Indiana Department of Public Instruction.

The College will offer the program only to students already enrolled in the College and as an aid to their achieving an occupational objective.

Applicants wanting to take the tests must be at least 19 years old at the time of application and must be residents of Indiana. Those who fail the tests may take them again after six months.

The curriculum material required is available as part of the Skills Advancement Courses in the Learning Resource Center.

Please contact your local regional institute for further details and testing schedules.

LEARNING RESOURCE CENTER

An extremely important factor in successful career training is the recognition of each student as an individual, with unique and individual training requirements. For this reason one of the most important college services is the Learning Resource Center in each regional institute.

Students work with books, tapes, slides, models and similar materials on an individual basis. They can repeat the work as often as necessary until they are sure they understand it, and when they need assistance, an instructor is nearby.

In the low-pressure learning laboratory environment, students enjoy study and usually progress faster than they would with other methods.

The learning laboratories are used primarily to teach such basic subjects as communications, speed reading, comprehension, writing and mathematics. Deficiencies in these areas often restrict students in their career subjects. The laboratories help students overcome their deficiencies as they progress in their other studies.

SKILLS ADVANCEMENT COURSES

Skills Advancement Courses, as a part of the Learning Resource Center, is a service program to all curricula. The program offers both institutional-credit and degree-credit courses, and features individualized, self-paced instruction tailored to each student's individual needs. The emphasis of the subject material is on communication skills, mathematics skills, shop processes, and science with supplementary material oriented toward the occupation the student has established as his goal. All advancement studies courses are designed so that students may begin at whatever level they are currently achieving and advance as rapidly as they choose to whatever objective has been set.

The amount and type of credit granted is based on the number of specific objectives the student has met. Institutional credit will be granted for those courses required to achieve the minimum entry requirements.

COURSE DESCRIPTIONS

Hours Credits

8105 Communications Skills Development arr 1-3

On an individualized self-paced basis, each student will cover writing, grammar and vocabulary development oriented toward his occupation.

8106 Reading Comprehension, Rate and Study Development arr 1-8

This segment should be taken concurrently with 8105. This course develops reading skills directed toward increased rates of reading speed plus greater degrees of comprehension and retention of information.

8107 Technical Communications arr 1-3

On an individualized, self-paced program the student will cover writing, reading, and speaking skills oriented toward occupational needs.

8108 Occupational Communications arr 1-3

Communications skills needed for specific occupations are covered with emphasis on the skill area most needed for that occupational skill.

8201 Mathematical Concepts and Operations arr 1-5

At his own pace, the student will cover pre-algebraic math concepts in numbering systems, and operations in addition, subtraction, fractions and decimals.

8202 Fundamentals of Technical Mathematics arr 1-5

On a self-paced format the student will cover the concepts of percentage, ratio, proportion, measurement, powers and roots.

8203 Technical Mathematics arr 1-5

Continuing from the previous material, algebraic concepts are introduced along with signed numbers and basic geometric and trigonometric relationships.

8204 Occupational Mathematics arr 1-5

On an individualized self-paced basis, math as used in the occupational area the student is enrolled, will be covered in detail.

8309 Science Development arr 1-3

On a self-paced format the student is introduced to concepts in physics, chemistry and biology that may be used as a foundation for the technical curriculum.

8410 Social Science Development 36.0 03.0

Through individual study, this course assists the student in exploring successful procedures for pursuing a career. Requirements necessary to upgrade working habits in jobs are presented to increase confidence in personal worth and ability to succeed on the job.

9112 Beginning Typewriting 72 03.0

This course is designed for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

9410 Shop Processes arr 1-5

This self-paced course is designed to develop the knowledge, skill and resourcefulness of the student in the use of hand and power tools. Emphasis is placed on safety and proper care of tools and equipment. Extensive laboratory work involves the techniques of measurements and the proper choice of tools for the job.

SPECIAL COURSES

The special courses listed below may be offered as separate courses or as electives (when permitted by the program) depending on local need as determined by the Regional Director.

In addition, many of the degree-credit courses shown in this catalog are available as skills advancement or special courses for those students who wish to improve their present occupational proficiency without entering a formal program.

Please contact your local regional institute for course availability and class schedules.

COURSE DESCRIPTIONS	Hours	Credits
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9190 Problem Seminar for Business Science arr 00.0

This is a non-credit elective, operated as an open arranged laboratory class in which the student pursues supervised study in Business Science. Problems are assigned by the department chairman.

9191 Employment Orientation in Business Science 24 01.0

Career pursuits are investigated in the Business Science division to include interviews, study of occupational information and its sources, testing, exploration of job opportunities and research of specific jobs and fields.

9290 Problem Seminar for Graphics and Media arr 00.0

This is a non-credit elective, operated as an open arranged laboratory class in which the student pursues supervised study in Graphics and Media. Problems are assigned by the department chairman.

9291 Employment Orientation in Graphics and Media 24 01.0

Career pursuits are investigated in the Graphics and Media division to include interviews, study of occupational information and its sources, testing, exploration of job opportunities and research of specific jobs and fields.

9305 Technical Mathematics for Health Occupations 60 5.0

A basic course in technical mathematics specially designed to provide health occupations students with a review of arithmetic, basic concepts of algebra, graphing geometry and logarithms. The course includes 12 hours of correlation problems specific to the student's technical field.

9306 Health Careers Mathematics 60 1.0

This course provides the basic mathematics background needed in subsequent health occupations program courses. The course includes the topics of basic arithmetic, exponents, directed numbers, operations of arithmetic using scientific notation, Roman numerals, conversions involving metric, apothecaries and household systems of measurement, temperature conversions between Centigrade and Fahrenheit units, simple equations and the construction and interpretation of graphs.

9307 Health Careers Biology 30 1.0

A one-credit course designed to introduce the fundamental biological concepts of organization, cell structure and respiratory processes.

COURSE DESCRIPTIONS	Hours	Credits
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9310 Pharmacology for Licensed Practical Nurses 60 4.0

This course is designed to present principles of action for drugs, correct dosage, methods of administration, symptoms of overdose and abnormal reactions that may arise from individual differences in particular patients.

9311 Mathematics of Pharmacology 24 2.0

This course is designed to present basic principles of computation for administration of drugs.

9314 Basic Techniques for Ward Clerks 240 6.0

This course is designed to prepare a non-professional worker with clerical and receptionist duties of the nursing unit under the supervision of the charge nurse on the unit.

9315 Arts and Practices for Nurse Aides and Orderlies 146 6.0

This course is designed to prepare nurses' aides and orderlies with the skills necessary to perform selected activities under direct supervision of the professional nurse.

Care of the patient unit, personal care of the patient, vital signs, admission procedures, nutrition and patient safety. 92 hours
Nursing in Specific Disease Conditions 18 hours
Employment Practices and Procedures 6 hours
Clinical Experience 30 hours

9316 Food Preparation and Service for Diet Aides 240 6.0

This course provides basic instruction in safe food handling, health practices, and sanitation. Care and use of equipment and safety requirements are stressed. The student receives classroom instruction and on-the-job practice in basic skills in management of work and in preparation and service of food in hospitals, nursing homes, homes for the aged and child care centers.

9317 LPN Leadership Team 36 3.0

This course introduces the Licensed Practical Nurse (LPN) to some basic concepts and skills of leadership which may be utilized in planning, implementing, directing, and evaluating the nursing care of patients.

9391 Health Careers Seminar 15 1.0

The Health Careers Seminar is a basic orientation course for students expecting to enter any health careers program at Indiana Vocational Technical College.

9490 Problem Seminar for Trade and Technical arr 00.0

This is a non-credit elective, operated as an open arranged laboratory class in which the student pursues supervised study in Trade and Technical. Problems are assigned by the department chairman.

9491 Employment Orientation in Trade and Technical 24 01.0

Career pursuits are investigated in the Trade and Technical division to include interviews, study of occupational information and its sources, testing, exploration of job opportunities and research of specific jobs and fields.

BUSINESS SCIENCES DIVISION

Our increasingly complex society offers outstanding job opportunities for those who have acquired a sound, fundamental knowledge of the field of business. The introduction of sophisticated information-handling systems in modern offices has increased the demand for highly trained office personnel.

To meet this need, the College offers programs in the major business career fields. Many of these programs lead to the Associate in Applied Science Degree, and also provide a firm basis for further study at the professional level.

All students are encouraged to remain in their chosen program until they have achieved their goal. However, the

College recognizes there are often many factors which may cause a student to interrupt training, even temporarily, before reaching an ultimate goal. Therefore, the College's unique curriculum design allows graduation with a certificate at progressive levels of identified career proficiency throughout each program.

The primary objective of the programs in the Business Sciences Division is to prepare occupationally competent graduates in the various areas of business; including development of business leadership and decision-making ability as applies to one of the fastest growing areas of employment in our economy.

GRAPHICS AND MEDIA DIVISION

The Graphics and Media Division of the College contains those programs which combine technical knowledge of materials, ingredients, machines, and methods of production with creativity to improve appearances, design, usefulness and general acceptance of a product by the consumer.

Generally, a high degree of creative ability, the art and science of communicating, and the ability to anticipate consumer needs are required for success. Natural talent, determination, and willingness to work hard are essential for success.

HEALTH OCCUPATIONS DIVISION

The delivery of health care services is the nation's fastest growing industry. With the advent of more sophisticated medical science, career opportunities in this field continue to grow. The concern for extending medical cures and preventative medical care to increasing numbers of people has also resulted in a significant need for technicians and aides to assist doctors, dentists and scientists in providing quality health care service.

To meet this need, Indiana Vocational Technical College offers a variety of programs in the health-related field. Health programs are designed to meet available national and state

certification and licensure standards. Each program is developed with the aid of local and statewide advisory committees to ensure that a high degree of graduate acceptance is maintained.

Each health occupations program emphasizes instruction in principles and practices of the specific technical area, and in addition, includes general education integrated throughout the program. An important part of health occupations programs is the clinical experience each student gains in cooperating hospitals, nursing homes, laboratories and other health care institutions.

TRADE AND TECHNICAL DIVISION

The increased mechanization of American industry, coupled with the ever-changing state-of-the-art in the technical fields, has created a tremendous need for broadly trained skilled technicians who have additional technical preparation above the high school level.

To meet this need, the College offers a variety of programs in the major trade and technical career fields. Many of these programs lead to the Associate in Applied Science Degree, and also provide a firm basis for further study at the professional level.

All students are encouraged to remain in their chosen program until they have achieved their goal. However, the College recognizes there are often factors which may cause a student to interrupt his training, even temporarily, before reaching his ultimate goal. Therefore, Ivy Tech's unique curriculum design allows graduation with a certificate at progressive levels of identified career proficiency throughout

each program

All programs in the Trade and Technical Division emphasize laboratory and shop work as a primary means of skill development, thus reinforcing the often stated demand of employers that graduates must know the "How as well as the "Why" of their chosen career field.

The general educational development of the student is given a high priority in each trade and technical program. In today's technological world, in which the only really constant parameter is change itself, the student must be prepared to adapt quickly to new ideas and procedures, and to communicate effectively with a broad range of people, both in and out of his specific occupational area.

Ivy Tech's curriculum design integrates general education studies in each technical course, thus stressing the working relationship between the highly skilled technician and the broader requirements of the world around him.

The expanding American economy, increasing size of the business community, growing complexities of taxation and the enlargement of governmental operations have combined to create a continuous demand for both public and private accountants.

Accounting is the language of business and is an important part of the central function of management. It uses measurement and communications of data regarding obtaining, disposing, and using material and human resources and the efficiency of their use. Accounting can and must measure and communicate data, not only in terms of symbols, but also in non-monetary units, such as material, labor and time. Accounting is a means of expressing in clear, understandable financial terms the results of complex operations of business, government and other institutions.

The Accounting Technology curriculum leads to the degree of Associate of Applied Science. The program prepares graduates for employment in the public or private accounting field in such positions as junior accountant, audit clerk, and many other related jobs.

ACCOUNTING TECHNOLOGY

		Hours	Credits
0151	Cost Accounting II	72	4
0152	Income Tax II	72	4
0153	Economics	48	4
0160	Accounting VI	72	4
0161	Human Relations	36	3
0167	Field Project and/or Case Study	180	6
	Elective	48	3

Total Contact Hours: 1,596

Total Credits: 93

Electives:

0162	Auditing	48	3
0163	Office Management and Procedures	48	3
0164	Money and Banking	48	3
0165	Budgeting	48	3
0166	Introduction to Management	48	3

*Field Project and/or Case Study (0134) to be elected by one-year students only.

ACCOUNTING TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
0110 Accounting I	72	4
0111 Mathematics of Finance	60	5
0112 Technical Communications	48	3
0113 Typewriting I	72	3
0120 Accounting II	72	4
0121 Business Communications	48	3
0122 Business Law I	36	3
0123 Office Calculating Machines	60	3
0124 Consumer Economics	36	3
0130 Accounting III	72	4
0131 Oral Communications	36	3
0132 Introduction to Data Processing and Programming	96	5
0133 Business Principles and Organization	36	3
*0134 Field Project and/or Case Study	90	4
0140 Accounting IV	72	4
0141 Income Tax I	72	4
0142 Cost Accounting I	72	4
0143 Business Law II	36	3
0150 Accounting V	72	4

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward the accounting field.

0110 Accounting I 72 4

This is an introduction to the fundamental principles, techniques and tools of accounting, giving an understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises, including an introduction to payroll accounting. Practical applications of the principles learned are in use.

0111 Mathematics of Finance 60 5

This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

0112 Technical Communications 48 3

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

0113 Typewriting I 72 3

This course is designed for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

COURSE DESCRIPTIONS	Hours	Credits
0120 Accounting II	72	4

Topics studied in this course are the partnership, internal control, notes and interest and departmental accounting. A further study of sales procedures and valuation of receivables, inventories and fixed assets.

0121 Business Communications	48	3
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The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

0122 Business Law I	36	3
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This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

0123 Office Calculating Machines	60	3
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Office Calculating Machines is designed to give the student a competent skill level in the application of related problems and the basic operation of adding and calculating machines representative of machines currently being utilized in business offices.

0124 Consumer Economics	36	3
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Study and review of the cost of living and price levels, factors affecting consumer choices, buying practices, management of personal and family finances, the role of government in consumer protection and current consumer problems are included in this course.

0130 Accounting III	72	4
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This is an introduction to branch operation accounting with further development of skill and knowledge of accounting. The student is expected to learn journal and statement presentation of corporated capital stock, receivables, intangible assets, deferred charges, long term liabilities, temporary investments and long term investments.

0131 Oral Communications	36	3
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Through intensive training in formative, persuasive and special purposes presentations, speech skills are developed.

0132 Introduction to Data Processing and Programming	96	5
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This course is designed to give a general introduction to data processing and programming with emphasis on electronic data processing. Topics include the development of data processing from manual methods through electromechanical to electronic, role of data processing in an organization, data processing applications, computer hardware, internal data representation, stored program concepts, programming systems, introduction to programming, operations research and data processing as a profession.

0133 Business Principles and Organization	36	3
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This course includes an introductory study and analysis of our business system as a whole in relation to our economic society. It includes an introduction to business ownership, organization, principles, problems, management, control, facilities, administration, enterprises and their functions.

0134 Field Project and/or Case Study	90	4
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The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience

COURSE DESCRIPTIONS	Hours	Credits
in business or industry or a research type case study including data collection and data analysis.		

0140 Accounting IV	72	4
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This course covers intermediate accounting principles related to the form and content of the income statement and the balance sheet, cash receipts, cash disbursements, cash reconciliations, accounts receivable, bad debts, short-term financing and the concepts of cost or market inventory valuation.

0141 Income Tax I	72	4
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Accounting procedure and problems connected with the Federal Income Tax Law and state laws for individuals, estates, and trusts. Prerequisite: 0120

0142 Cost Accounting I	72	4
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A study of job-order cost accounting procedures, manufacturing overhead control, departmentalization, material control, labor control and report forms. Prerequisite: 0120

0143 Business Law II	36	3
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This course is a continuation of Business Law I with emphasis on topics which include bailments, secured transactions, partnerships and corporations, property, wills and trusts, insurance, suretyship, guaranty and bankruptcy.

0150 Accounting V	72	4
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Intermediate and advanced accounting principles dealing with corporations, temporary investments, long term investments, special bond transactions amortization, revaluation of plant and equipment, retirement of plant and equipment, repairs and maintenance, depreciation, natural resources, intangible assets, goodwill, corporate earnings and corporate dividends.

0151 Cost Accounting II	72	4
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This is a study of process cost accounting, standard cost procedures, estimating and controlling costs through use of budget and profit analysis.

0152 Income Tax II	72	4
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This is a study of the accounting procedure and problems connected with the Federal Income Tax Law and state laws for corporations.

0153 Economics	48	4
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Economics includes an analysis of national income accounts, the operation of the monetary and banking system and a survey of international economic problems. It will also include some identification of economic principles at the industry level and includes economic analysis of pricing and output, the allocation of resources and distribution of income.

0160 Accounting VI	72	4
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Advanced accounting principles dealing with consignments, business combinations, business liquidations and consolidated statement presentation.

0161 Human Relations	36	3
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In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

0162 Auditing	48	3
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Public accounting organization and operation is studied, including internal control, internal auditing, verification of the balance sheet and operating accounts and the auditor's report of opinion.

COURSE DESCRIPTIONS	Hours	Credits
0163 Office Management and Procedures	48	3
Management skills and techniques of business offices is emphasized. Human relations, personnel department functions and employment procedures are studied. Experience in applying skills and knowledges gained in office management situations will be provided.		
0164 Money and Banking	48	3
A study of monetary theory and banking theory as they relate to present-day domestic and international problems. Topics include banking operations, price changes, international monetary relationships and the application of monetary and fiscal policy.		
0165 Budgeting	48	3
Procedures in the preparation and use of business budgets,		

COURSE DESCRIPTIONS	Hours	Credits
with particular emphasis on them as aids in coordinating and directing business operations. Prerequisite: 0120		
0166 Introduction to Management	48	3
A study of the vital role of management in organizations of various sizes. A close look at the inter-relationships of the various departmental functions and the establishment of lines of authority and responsibility. A manager's duties relating to communications, motivation and delegation of authority are treated.		
0167 Field Project and/or Case Study	180	6
The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.		

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
0310 Accounting I	72	4
0311 Mathematics of Finance	60	5
0312 Typewriting I	72	3
0313 Office Calculating Machines	60	3
0320 Accounting II	72	4
0321 Business Law I	36	3
0322 Small Business Finance	48	3
0323 Business Principles and Organization	36	3
0324 Technical Communications	48	3
0330 Cost Accounting I	72	4
0331 Income Tax I	72	4
0332 Introduction to Management	36	3
0333 Business Communications	48	3
0334 Principles of Insurance	90	4
*0335 Field Project and/or Case Study	90	4
0340 Accounting III	72	4
0341 Cost Accounting II	72	4
0342 Oral Communications	36	3
0343 Human Relations	36	3
0344 Office Management and Procedures	48	3
0350 Accounting IV	72	4
0351 Business Law II	36	3
0352 Purchasing and Inventory Control	72	4
0353 Budgeting	48	3
0354 Money and Banking	48	3
0360 Personnel Supervision	60	4
0361 Marketing I	72	4
0362 Labor-Management Relations	72	4
0363 Field Project and/or Case Study	180	6

Total Contact Hours: 1,746

Total Credits: 101

*Field Project and/or Case Study (0335) to be elected by one-year students only.

BUSINESS MANAGEMENT TECHNOLOGY

COURSE DESCRIPTIONS

	Hours	Credits
0310 Accounting I	72	4

This is an introduction to the fundamental principles, techniques and tools of accounting, giving an understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises, including an introduction to payroll accounting, Practical applications of the principles learned are in use.

0311 Mathematics of Finance	60	5
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This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

0312 Typewriting I	72	3
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This course is designed for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

0313 Office Calculating Machines	60	3
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Office Calculating Machines is designed to give the student a competent skill level in the application of related problems and the basic operation of adding and calculating machines representative of machines currently being utilized in business offices.

0320 Accounting II	72	4
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Topics studied in this course are the partnership, internal control, notes and interest and departmental accounting. A further study of sales procedures and valuation of receivables, inventories and fixed assets.

0321 Business Law I	36	3
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This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

0322 Small Business Finance	48	3
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Principles underlying the financial practices of modern small businesses, including the tools of analysis and decision making in directing the financial operations of a small business enterprise.

0323 Business Principles and Organization	36	3
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This course includes an introductory study and analysis of our business system as a whole in relation to our economic society. It includes an introduction to business ownership, organization, principles, problems, management, control, facilities, administration and practices to develop an understanding of American business enterprises and their functions.

0324 Technical Communications	48	3
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Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward business management.

COURSE DESCRIPTIONS	Hours	Credits
0330 Cost Accounting I	72	4
A study of job-order cost accounting procedures, manufacturing overhead control, departmentalization, material control, labor control and report forms. Prerequisite: 0320		
0331 Income Tax I	72	4
Accounting procedure and problems connected with the Federal Income Tax Law and state laws for individuals. Prerequisite: 0320		
0332 Introduction to Management	36	3
A study of the vital role of management in organizations of various sizes. A close look at the inter-relationships of the various departmental functions and the establishment of lines of authority and responsibility. A manager's duties relating to communications, motivation and delegation of authority are treated.		
0333 Business Communications	48	3
The skills needed to write business communications are taught in this course. This includes preparation of action getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.		
0334 Principles of Insurance	90	4
The various types of insurance, including life, health and accident, hospitalization, fire and storm, burglary, liability, automobile, marine, types of insurance companies, types of coverage, problems, government regulations are covered. This is an introductory course for further study in a specialized field.		
0335 Field Project and/or Case Study	90	4
The student will be given a special project of case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.		
0340 Accounting III	72	4
An introduction to branch operation accounting. Further development of skill and knowledge of accounting. To learn journal and statement presentation of corporated capital stock, receivables, intangible assets, deferred charges, long-term liabilities, temporary investments and long-term investments.		
0341 Cost Accounting II	72	4
This is a study of process cost accounting, standard cost procedures, estimating and controlling costs through use of budget and profit analysis.		
0342 Oral Communications	36	3
Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.		
0343 Human Relations	36	3
In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.		
0344 Office Management and Procedures	48	3
Management skills and techniques of business offices is emphasized. Human relations, personnel department functions and employment procedures are studied. Experience in applying		

COURSE DESCRIPTIONS	Hours	Credits
skills and knowledges gained in office management situations will be provided.		
0350 Accounting IV	72	4
This course covers advanced accounting principles related to the form and content of the income statement and the balance sheet, cash receipts, cash disbursements, cash reconciliations, accounts receivable, bad debts, short-term financing and the concepts of cost or market inventory valuation.		
0351 Business Law II	36	3
This course is a continuation of Business Law I with emphasis on topics which include bailments, secured transactions, partnerships and corporations, property, wills and trusts, insurance, suretyship, guaranty and bankruptcy.		
0352 Purchasing and Inventory Control	72	4
This course provides a practical approach to procurement with regard to price, quality, quantity and delivery. Personal ethics, legal aspects of contracts, records, performance, and foreign procurement standards are discussed in detail. The role of the purchasing section or department, as a member of management's value analysis team, is studied in depth.		
0353 Budgeting	48	3
Procedures in the preparation and use of business budgets, with particular emphasis on them as aids in coordinating and directing business operations. Prerequisite: 0320		
0354 Money and Banking	48	3
A study of monetary theory and banking theory as they relate to present-day domestic and international problems. Topics include banking operations, price changes, international monetary relationships and the application of monetary and fiscal policy.		
0360 Personnel Supervision	60	4
The field of personnel administration, which includes the basic functions of all managers and the specialized functions of all managers and the specialized functions of personnel management. A combination of lecture, discussion and case analysis may be used here.		
0361 Marketing I	72	4
This course is an introduction to the problems of manufacturers, wholesalers, and retailers as they relate to marketing goods and services. Attention is paid to channels of distribution.		
0362 Labor-Management Relations	72	4
Students explore the development and application of the labor laws and practices that form the basis of modern-day industrial relations. Among the topics considered are the history and development of organized labor, Federal labor legislation, labor-management laws, civil rights, state laws and regulations, local regulations, Federal mediation and conciliation service, the organizing drive, the strike, collective bargaining, anatomy of a labor agreement, handling in-shop grievances and arbitration.		
0363 Field Project and/or Case Study	180	6
The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.		

COMPUTER PROGRAMMING

Data processing is a rapidly growing field with rapidly expanding opportunities for employment. Business, industry and science need fast service in the processing of data. Such data provides management with current information on which to base decisions. Well-trained people are urgently needed to develop and implement methods for data collection, processing and reporting.

The Computer Programming curriculum is designed to provide an integrated study of the theory and practice of data processing for business, industry and other institutional use.

The curriculum is designed to prepare students for employment as programmers, data processing control clerks, computer operators and other positions in organizations including wholesale and retail businesses, hospitals, governmental agencies, insurance companies, banks, transportation organizations, public utilities, manufacturing firms, distributors and similar organizations.

COMPUTER PROGRAMMING

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
0510 Introduction to Data Processing and Programming	96	5
0511 Business Principles and Organization	36	3
0512 Technical Algebra	84	5
0513 Technical Communications	48	3
0520 Cobol Programming I	96	5
0521 Computer Operations	72	5
0522 Problem Solving Techniques	48	3
0523 Business Communications	48	3
0530 Cobol Programming II	96	5
0531 Operating Systems	84	4
0532 Accounting I	72	4
0533 Oral Communications	36	3
0540 Systems Analysis and Designs	96	5
0541 Introduction to Statistics	36	3
0542 Accounting II	72	4
0551 Business Programming Applications	96	5
0552 Psychology	36	3
0560 Data Communications	48	4
0561 Field Project and/or Case Study	240	8
Electives	324 to 360	18 to 19

Total Contact Hours: 1,764 to 1,800
Total Credits: 98 to 99

Hours Credits

Three Electives selected from:

0570 Assembler Language Program I	96	5
0571 Assembler Language Program II	96	5
0572 Fortran Programming	96	5
0573 Report Program Generator (R.P.G.)	96	5
0574 PL/I	96	5
0575 ANS Cobol	96	5

One Elective selected from:

0550 Cost Accounting I	72	4
0576 Accounting III	72	4
0577 Business Law I	36	3
0578 Income Tax I	72	4
0579 Introduction to Management	36	3
0580 Key Device Training	72	4

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward the computer industry.

0510 Introduction to Data Processing and Programming

96 5

This course is designed to give a general introduction to data processing and programming with emphasis on electronic data processing. Topics include the development of data processing from manual methods through electromechanical to electronic, role of data processing in an organization, data processing applications, computer hardware, internal data representation, stored program concepts, programming systems, introduction to programming, operations research and data processing as a profession.

0511 Business Principles and Organization

36 3

This course includes an introductory study and analysis of our business system as a whole in relation to our economic society. It includes an introduction to business ownership, organization, principles, problems, management, control, facilities, administration and practices to develop an understanding of American business enterprises and their functions.

0512 Technical Algebra

84 5

Algebra is studied including the operations with signed numbers, variables, first degree equations, special products, factoring and algebraic fractions. An emphasis is placed on scientific notation, powers, and roots with slide rule techniques included.

0513 Technical Communications

48 3

Training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

COURSE DESCRIPTIONS	Hours	Credits
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0520 Cobol Programming I	96	5
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This course provides the student with a working knowledge of the programming language Cobol and its application to business data processing. Through laboratory experience, the student will gain proficiency in solving basic business problems with the Cobol language. Prerequisite: 0510

0521 Computer Operations	72	5
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The student will learn actual computer operations and will become proficient in handling and setting up complex disk and tape file runs. The student will learn to run book and message control functions and to read job descriptions and flow charts. Prerequisite: 0510

0522 Problem Solving Techniques	48	3
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This course will familiarize the student with those techniques necessary for the efficient solution of computer programming logic problems. Logic examples and exercises are used to develop student confidence and the ability to solve programming problems. Prerequisite: 0510

0523 Business Communications	48	3
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The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

0530 Cobol Programming II	96	5
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This course is a continuation of Cobol Programming I with emphasis on complex file handling techniques and the use of advanced Cobol extensions. Laboratory experience will develop a higher level of proficiency in the use of Cobol while developing a working knowledge of the use of advanced Cobol features and techniques.

0531 Operating Systems	84	4
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A study of computer operating systems, their purpose, structure and various functions. The course will provide the student with a general understanding of how comprehensive sets of language translators and service programs operating under the supervisory coordination of an integrated control program form the total operating system of a computer. Prerequisites: 0521, 0530

0532 Accounting I	72	4
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An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises, including an introduction to payroll accounting. Practical applications of the principles learned are in use.

0533 Oral Communications	36	3
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Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

0540 Systems Analysis and Designs	96	5
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Functions and techniques of systems analysis, design, and development. Topics include science analysis, system flow charting, data collection techniques, file design and management determination of processing and equipment requirements. Communications between user and the data processing department will be stressed as well as reporting methods. Study and analysis of problems that may be encountered and the possible solution to those problems by the use of case studies are covered in this course. Prerequisites: 0522, 0530 and 0531

0541 Introduction to Statistics	36	3
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Descriptive statistics (collection and presentation of data, frequency distributions, measures of central tendency, dispersion

COURSE DESCRIPTIONS	Hours	Credits
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and skewness), index numbers, simple correlation and regression, curve fitting and introduction to statistical inference, sampling and probability are studied. Prerequisite: 0512

0542 Accounting II	72	4
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Topics studied in this course are the partnership, internal control, notes and interest and departmental accounting. A further study of sales procedures and valuation of receivables, inventories and fixed assets.

0550 Cost Accounting I	72	4
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A study of job order cost accounting procedures, manufacturing overhead control, departmentalization, material control, labor control and report forms. Prerequisite: 0542

0551 Business Programming Applications	96	5
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An advanced course in the study of business programming applications with topics relating to distribution, manufacturing, banking and insurance corporations. Specific applications include billing, accounts receivable, sales analysis, payroll, inventory, and cost. These will be supported by a brief sketch of manual methods with a more detailed discussion in terms of computer systems and with exercises in programming. Prerequisites: 0530, 0540

0552 Psychology	36	3
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This course presents a study of psychological behavior and research within employer-employee relationships. Information concerning human needs and behavior in business and industry is designed to improve individual attitudes, productivity and personal morale in working situations.

0560 Data Communications	48	4
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This course develops in the student familiarity with modern data communications techniques as applied to data processing. The student learns the vocabulary and techniques common to remote processing, time sharing, data transmission and similar topics. Prerequisites: 0521, 0530 and 0531.

0561 Field Project and/or Case Study	240	8
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The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

0570 Assembler Language Programming I	96	5
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This course will familiarize the student with a machine-oriented low-level programming language. The language taught will depend on machine access and will concentrate on the instruction set used for commercial application. Laboratory will include coding, debugging and testing of assembler language programs. Prerequisite: 0510

0571 Assembler Language Programming II	96	5
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A continuation of Assembler Language Programming I with emphasis on disc and tape programming techniques.

0572 Fortran Programming	96	5
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Introduction to a computational type of problem oriented language; use of arithmetical expressions, conditional control, iteration techniques, input-output specifications, tables, and subprograms to solve problems which involve computation. Prerequisite: 0510

0573 Report Program Generator (R.P.G.)	96	5
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This course covers the use of the compiler language R.P.G. as a means of solving business problems. It covers the areas of multiple input and/or output, the use of business mathematics in the

COURSE DESCRIPTIONS	Hours	Credits
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solution to business and other problems. Upon completion of this course the student is expected to be productive with R.P.G. as a compiler language. Prerequisite: 0510

0574 PL/I Programming	96	5
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This course will familiarize the student with the PL/I programming language, its capabilities and limitations. The student will learn to use PL/I to solve a variety of programming problems. Laboratory will include coding, debugging and testing of PL/I programs. Prerequisite: 0510

0575 ANS COBOL	96	5
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Emphasis on the difference between COBOL used by certain manufacturers and the American National Standard COBOL. Stress is placed on sort feature and report writer feature. Prerequisite: 0510

0576 Accounting III	72	4
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This is an introduction to branch operation accounting with further development of skill and knowledge of accounting. The student is expected to learn journal and statement presentation of corporated capital stock, receivables, intangible assets, deferred charges, long term liabilities, temporary investments and long term investments.

COURSE DESCRIPTIONS	Hours	Credits
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0577 Business Law I	36	3
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This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

0578 Income Tax I	72	4
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Accounting procedure and problems connected with the Federal Income Tax Law and state laws for individuals, estates, and trusts. Prerequisite: 0542

0579 Introduction to Management	48	3
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A study of the vital role of management in organizations of various sizes. A close look at the inter-relationships of the various departmental functions and the establishment of lines of authority and responsibility. A manager's duties relating to communications, motivation and delegation of authority are treated.

0580 Key Device Training	72	4
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This course is designed to develop a high level of skill in operating key punch, or key to tape, or key to disc equipment. Speed and accuracy are stressed.

Inns have been a part of the world scene since earliest times. Today, "food and lodging" is one of the mammoth industries in America in terms of sales and the employment of trained people. The hotel executive is always seeking greater efficiency in all departmental functions.

The management-level employee of any size hotel must be knowledgeable in all facets of this type of business — one of the most complex of organizations. For this reason, training includes the study of finance, food and beverage management, public relations, advertising, housekeeping and personnel management.

Employment opportunities may be found as audit clerk, food and beverage supervisor, sales representative, or management trainee, to name a few.

HOTEL-MOTEL MANAGEMENT TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
0710 Mathematics of Finance	60	5
0711 Introduction to Hotel-Motel Management and Organ.	96	5
0712 Hotel-Motel Front Office Procedures	48	3
0713 Technical Communications	48	3
0720 Accounting I	72	4
0721 Typewriting I	72	3
0722 Introduction to Motor Hotel Management	60	5
0723 Business Principles and Organization	36	3
0730 Hotel-Motel Records Management	48	3
0731 Accounting II	72	4
0732 Techniques of Hotel-Motel Supervision I	72	4
0733 Hotel-Motel Food and Beverage Management and Service	48	4
0740 Techniques of Hotel-Motel Supervision II	72	4
0741 Business Communications	48	3
0742 Hotel-Motel Food and Beverage Purchasing and Control	84	5
0743 Business Law I	36	3
0750 Oral Communications	36	3
0751 Business Law II	36	3

HOTEL-MOTEL MANAGEMENT TECHNOLOGY

	Hours	Credits
0752 Hotel-Motel Sales	48	3
0753 Field Project and/or Case Study	180	6
0760 Hotel-Motel Maintenance and Engineering	36	3
0761 Human Relations	36	3
0762 Hotel-Motel Supervisory Housekeeping	48	3
0763 Field Project and/or Case Study	180	6

Total Contact Hours: 1,572
Total Credits: 91

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward the hotel-motel industry.

0710 Mathematics of Finance	60	5
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This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

0711 Introduction to Hotel-Motel Management and Organization	96	5
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This course is designed to give the background of hotel-motel management from early innkeeping to the modern skyscraper hotel. Organization of hotel operations, opportunities and trends will be stressed.

0712 Hotel-Motel Front Office Procedures	48	3
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Develops the area of human and public relations responsibilities of the front office salesmanship, cashier's charges, posting machines and some legal aspects of innkeeping.

0713 Technical Communications	48	3
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Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

0720 Accounting I	72	4
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An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises, including an introduction to payroll accounting. Practical applications of the principles learned are in use.

COURSE DESCRIPTIONS	Hours	Credits
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0721 Typewriting I	72	3
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The course is designed for beginners in typewriting. It covers the development of fundamental touch typewriting techniques, skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

0722 Intro. to Motor-Hotel Management	60	5
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A study for operators of small and large properties. Emphasizes administrative techniques for today's motor-hotel operators such as history, space utilization and business practices.

0723 Business Principles and Organization	36	3
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This course includes an introductory study and analysis of our business system as a whole in relation to our economic society. It includes an introduction to business ownership, organization, principles, problems, management, control, facilities, administration, and practices to develop an understanding of American business enterprises and their functions.

0730 Hotel-Motel Records Management	48	3
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A study of records peculiar to the hospitality industry, including accounting records, financial statements and billing procedures.

0731 Accounting II	72	4
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Topics studied in this course are the partnership, internal control, notes and interest and departmental accounting. A further study of sales procedures and valuation of receivables, inventories and fixed assets.

0732 Techniques of Hotel-Motel Supervision I	72	4
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Course is designed to assist the student in learning supervisory skills and organizational methods for maximizing the employer's day-to-day work performance.

0733 Hotel-Motel Beverage Management and Service	48	4
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An overview for complete food and beverage operations which extends from purchasing, receiving and storage to preparation and service.

0740 Techniques of Hotel-Motel Supervision II	72	4
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This is an extension of Techniques of Hotel-Motel Supervision I and develops a higher degree of competence needed for effective management of people of all job levels found in hotels and motels. It covers communications, motivation, delegation of authority, orienting and inducting new employees, and employee performance evaluation.

0741 Business Communications	48	3
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The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

0742 Hotel-Motel Food and Beverage Purchasing and Control	84	5
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A detailed study of the major groups of food purchased by quantity buyers, including fresh fruits and vegetables, processed fruits and vegetables, dairy products, cereals and cereal prod-

COURSE DESCRIPTIONS	Hours	Credits
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ucts, beverages, poultry and eggs, fish and shell fish, meats and alcoholic beverages. The course outlines the essentials of effective food and beverage control. Establishes a system for determining sale values for food and beverages.

0743 Business Law I	36	3
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This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

0750 Oral Communications	36	3
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Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

0751 Business Law II	36	3
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This course is a continuation of Business Law I with emphasis on topics which include bailments, secured transactions, partnerships and corporations, property, wills and trusts, insurance, suretyship, guaranty and bankruptcy.

0752 Hotel-Motel Sales	48	3
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A critical study of effective techniques for promoting the industry through application of principles of sales, service, marketing, advertising media, and public relations.

0753 Field Project and/or Case Study	180	6
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The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

0760 Hotel-Motel Maintenance and Engineering	36	3
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Examines the organization of the engineering department. Discusses plumbing, heating ventilation, refrigeration and air conditioning, and electrical systems. Vertical transportation, structural maintenance, painting, landscaping, contracts, communication, acoustics, fire protection and maintenance of kitchen equipment represent the content of this course.

0761 Human Relations	36	3
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In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

0762 Hotel-Motel Supervisory Housekeeping	48	3
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Provides a functional knowledge of the supervisor's duties such as recordkeeping, staffing, and employee training pertaining particularly to training and supervision of those employees whose duties relate directly to housekeeping.

0763 Field Project and/or Case Study	180	6
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The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

INDUSTRIAL MANAGEMENT TECHNOLOGY

The Industrial Management Technology curriculum prepares students for success in fields of industrial management and supervision, such as first line supervision, foremanship or top management of small and medium sized firms.

The courses are designed to provide a broad understanding of the principles of supervision and management as well as the opportunity to acquire competence in fundamental methods and techniques for efficient and effective application of these principles. Included in the curriculum is a study of supervision, training techniques, economics, organization and management leadership, with specialized study in materials management, work simplification and labor law.

The program emphasizes problem solving techniques for the development and improvement of managerial talent.

The program is also helpful for persons currently employed in the various categories of management to further develop basic and well-rounded educational experiences to support their job experience.

Graduates of the Industrial Management Technology program may find employment in industrial training, safety and first aid, work/simplification, quality control, technical report writing, cost control, production supervision and other related areas.

INDUSTRIAL MANAGEMENT TECHNOLOGY

Associate Degree

After testing and guidance counseling, units from the skills advancement studies may be individually prescribed for those students requiring review in communications skills and mathematics to the level considered necessary to enter first quarter courses. It is also possible through testing and guidance counseling to identify students who may qualify for advanced standing because of previous occupational experience or formal training.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

		Hours	Credits
0910	Introduction to Technical Communications	48	3
0911	Technical Mathematics	60	4
0912	Manufacturing Organization and Management	60	3
0913	Techniques of Supervision I	60	3
0920	Technical Communications	48	3
0921	Industrial Safety and Plant Protection	48	3
0922	Laws as Applied to Industry	48	3
0923	Techniques of Supervision II	60	3
0924	Physical Science	60	4

		Hours	Credits
0930	Technical Reporting	60	4
0931	Motion and Time Study	60	4
0932	Safety Regulations	60	3
0933	Introduction to Data Processing	48	3
0940	Quality Control	48	3
0941	Labor-Management Relations	60	3
0942	Purchasing and Inventory Control	60	3
0943	Oral Communications	36	3
0944	Blueprint Reading	60	4
0950	Manufacturing Cost and Value Analysis	60	3
0951	Production and Inventory Control	60	3
0952	Job Analysis and Evaluation	48	3
0953	Human Relations	36	3
0954	Handling and Storage of Industrial Materials	48	4
0960	Economics of Industry	60	3
0961	Plant Layout and Process Planning	60	3
0962	Traffic and Transportation Management	48	3
0963	Accounting for Managers	48	3
0964	Industrial Assembly Techniques	48	4

Total Contact Hours: 1,500
Total Credits: 91

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward the industrial management field.

0910	Introduction to Technical Communications	48	3
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After individual testing to determine specific language needs, this course provides for extensive training in general writing, listening, reading and speaking. Emphasis is placed on the use of logic in the development of written and oral ideas.

0911	Technical Mathematics	60	4
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Algebra is studied including the operations with signed numbers, variables, first degree equations, special products, factoring and algebraic fractions. Slide rule techniques are emphasized throughout.

0912	Manufacturing Organizations and Management	60	3
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An in-depth study oriented to the first-line supervisor and other management personnel who are interested in the interrelationships of the various departmental functions and the overall management problems encountered in a manufacturing organization. It includes the establishment of lines of authority, duties and responsibility, and rules for charting an organization structure. Also reviewed are manufacturing engineering and re-

COURSE DESCRIPTIONS

search, industrial engineering, materials management, process and product control, facilities planning, plant engineering and manufacturing information systems.

0913 Techniques of Supervision I 60 3

This course covers management development. The material is directed toward the responsibilities of any supervisor; including responsibilities of the supervisor functioning within an organizational structure. It relates to communications, motivation, delegation of authority, interviews, orienting and inducing new employees, and evaluation of employee performance.

0920 Technical Communications 48 3

Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

0921 Industrial Safety and Plant Protection 48 3

This course covers day-to-day responsibilities of management and supervision to obtaining an accident-free organization. Emphasis is placed on first aid, fire prevention, mounting of guards, control, starting and stopping of machines, accident investigations and other preventive measures. Also covered are the methods of advertising good safety practices, rules of plant protection in relation to safety.

0922 Laws as Applied to Industry 48 3

An up-to-date study of legislation that affects business and industry today, including the Occupational Safety and Health Act, hiring and employment practices, and environmental protection.

0923 Techniques of Supervision II 60 3

This course is designed to develop the necessary skills needed for effective management of people. The various topics will be developed through group discussion, case studies, and in-basket situations.

0924 Physical Science 60 4

The basic concepts of physics and chemistry are introduced including measurements, heat and forces and their effect on metals and other materials. Emphasis is on the practical application of the physical sciences.

0930 Technical Reporting 60 4

Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

The subjects will include elemental breakdown sheets, leveling factors, variables, M.T.M. application, standard data, general purpose data, sampling study, direct and indirect standards, and graphical general purpose data, sampling study, direct and indirect standards, and graphical expression.

0931 Motion and Time Study 60 4

A study of time and motion in the practical application area, using industrial practice as a basis for the establishment of rates.

0932 Safety Regulations 60 3

A study of the recording and maintaining of an accident severity rate, correctly submitting workman's compensation claims, insurance claims and managing a safety program in compliance with laws or contractual agreements.

0933 Introduction to Data Processing 48 3

This course provides the management-level person with an understanding of the scope and significance of data processing, including punched-card unit record equipment, electronic data processing equipment, and basic computer concepts.

COURSE DESCRIPTIONS

0940 Quality Control 48 3

Emphasis is placed on the principles and techniques of quality control to fulfill the organizational objectives of completing the job correctly the first time. The purpose of the course is to provide unit managers and supervisors with an understanding of the use of scientific quality control. Topics covered include vendor-customer relationships, sampling inspections, process control and tests for significance. Emphasis is placed on an individual being able and qualified to determine what type of quality control is best for a particular industry.

0941 Labor-Management Relations 60 3

Students explore the development and application of labor laws and practices that form the basis of modern day industrial relations. Among the topics considered are the history and development of organized labor, Federal labor legislation, labor-management laws, civil rights, state laws and regulations, local regulations, Federal mediation and conciliation service, the organizing drive, the strike, collective bargaining, anatomy of a labor agreement, handling in-shop grievances, and arbitration.

0942 Purchasing and Inventory Control 60 3

This course provides a practical approach to procurement with regard to price, quality, quantity and delivery. Personal ethics, legal aspects of contracts, records, performance, and foreign procurement standards are discussed in detail. The role of the purchasing section or department, as a member of management's value analysis team, is studied in depth.

0943 Oral Communications 36 3

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

0944 Blueprint Reading 60 4

Instruction and practice in the study of working drawings and application of understandings from the "print" to the "work." Students will concentrate on the kinds of working plans analogous to the occupational interest area. Typical units will include the relationship of views and details, interpretation of dimensions, transposing scale, tolerances, electrical symbols, schematic diagrams, welding symbols, sections, material symbols, material lists, architectural plates, room schedules and plot plans.

0950 Manufacturing Costs and Value Analysis 60 3

This course applies recognized techniques and tests to measure value and thus eliminate unnecessary costs in design, development, and manufacturing without affecting quality. It differs from cost control because it is directed toward analyzing value — not cost.

0951 Production and Inventory Control 60 3

This course is designed to bring the range of concept and techniques to useful application in the practical design of production planning, inventory control systems, and follow-up.

0952 Job Analysis and Evaluation 48 3

This course covers the principles of objective job analysis, establishment of proper job description and development of job content, requirements and limitations. The evaluation studies cover various approaches to job evaluation such as ranking, factor or point comparison and the relationships of results to wage scales.

0953 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

COURSE DESCRIPTIONS	Hours	Credits
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0954 Handling and Storage of Industrial Materials	48	4
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A study of applied stresses and quality controls of industrial materials while handling and storing. Shelf life of certain materials, weight and mass configuration, and vendor's materials specifications.

0960 Economics of Industry	60	3
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A course covering fundamental economics and basic principles of business systems. Everyday terminology is used and emphasis is placed on practical economics as opposed to the theoretical. Subjects covered include various types of business organization, costs and pricing, competition, money system, taxes, productivity and automation.

0961 Plant Layout and Process Planning	60	3
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Factory planning is studied with emphasis on the most efficient arrangements of work areas to achieve lower manufacturing costs. Layouts for small- and medium-sized plants, layout fundamentals, selection of production equipment and materials handling equipment will be covered. The principles, practices and methods of process planning are included as well as tooling determination, operational sequence, setup and operational time,

COURSE DESCRIPTIONS	Hours	Credits
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routing forms and interpretation of charts, and process analysis of selected jobs.

0962 Traffic and Transportation Management	48	3
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This course is presented for the development of personnel associated with or working in the transportation and traffic management field. The course is designed to cover intermediate management, technical development and other phases of transportation organizations. It includes discussions covering the American transportation system, Federal regulations, freight traffic territory, freight classification, principles of freight rates and tariffs, shipping documents and their application, special freight services, and a study of freight claims.

0963 Accounting for Managers	48	3
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Basic concepts and issues of accounting for internal planning, decision-making, and control for the management-level or potential management-level employee.

0964 Industrial Assembly Techniques	48	4
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A study of methods of assembly, fasteners, the uniqueness of various assembly materials, metallurgy, plastics and modern composition.

MARKETING TECHNOLOGY

The economy of our country is dependent upon our ability to distribute the goods we produce, and there is an increasing demand for men and women who are prepared to fill mid-management marketing positions.

Industrial marketing technicians may be known as industrial or wholesale salesmen, factory representatives, or service representatives. They work for manufacturers, distributors, service firms, or wholesalers; and they are involved in some phase of the movement of goods from factory to consumer.

Their firms may sell hundreds of items or only one; the product may be highly technical or non-technical; they may sell their product to other businesses — factories, railroads, banks, wholesalers, retailers, hospitals or schools. Industrial salesmen represent their firms in an assigned territory. They introduce new products, sell established items, and are of service to their customers.

The volume of retail sales in Indiana has tripled in the past 20 years and has led to an increased need for people trained in retail marketing — people who do more than just “wait on” customers. Good salespersons are friendly and helpful to the customer, know how to generate buying excitement and how to display merchandise effectively. They understand the guidelines of successful operation of a business.

Advanced positions in retail marketing call for people who know how to establish sales goals, how to keep inventory in balance with demand, and how to hire and train employees. The occupational opportunities of this program are many and varied. Employment may be acquired as a management trainee, fashion buyer, manufacturers’ representative or in the area of advertising display, sales promotion, technical writing or customer service.

MARKETING TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
1110 Marketing I	72	4
1111 Salesmanship	84	5
1112 Credit Procedures	48	3

Hours Credits

1113	Technical Communications	48	3
1120	Marketing II	72	4
1121	Business Communications	48	3
1122	Mathematics of Finance	60	5
1123	Principles of Retailing or		
1124	Manufacturing Organization and Management	72	4
1130	Marketing III	72	4
1131	Oral Communications	36	3
1132	Accounting I	72	4
1133	Principles of Insurance	60	4
1140	Sales Management	72	5
1141	Stock Control Systems	60	4
1142	Physical Distribution	72	4
1143	Principles of Wholesaling or		
1144	Merchandise Buying	72	4
1150	Principles of Advertising	72	4
1151	Human Relations	36	3
1152	Purchasing and Inventory Control or		
1153	Techniques of Merchandise Display	72	4
1154	Retail Store Management or		
1155	Techniques of Fashion Buying	72	5
1160	Business Law I	36	3
1161	Consumer Economics	36	3
1162	Field Project and/or Case Study	180	6
1163	Labor-Management Relations or		
1164	Textiles	48	4

Total Contact Hours: 1,572
Total Credits: 95

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student’s individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward marketing.

1110 Marketing I	72	4
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This course is an introduction to the problems of manufacturers, wholesalers, and retailers as they relate to marketing goods and services. Attention is paid to channels of distribution.

1111 Salesmanship	84	5
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This is a survey course of sales and the techniques of selling products and services. Equal stress is placed on selling the product as well as selling the service. The course covers all phases of the sales including approach, demonstration, close and departure. A short selection is given on development of the personality and the art of selling one’s self.

COURSE DESCRIPTIONS	Hours	Credits
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1112 Credit Procedures	48	3
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Principles and methods of credit administration in the mercantile and retail field, including sources of information, credit policy, credit control, legal remedies, and collection techniques are covered.

0113 Technical Communications	48	3
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Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

1120 Marketing II	72	4
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A continuation of Marketing I. Types of business enterprises, how to enter business, competition, pricing, market research, credit policies, and management techniques are discussed.

1121 Business Communications	48	3
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The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

1122 Mathematics of Finance	60	5
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This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

1123 Principles of Retailing	72	4
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Topics covered are business location, building fixtures and equipment, store layout, retail management organization, purchasing procedures, merchandise discounts and ordering policies, product inventory control systems, planning the merchandise budget, receiving, checking and marketing merchandise, retail store promotions, pricing, retail store services and trends in marketing.

1124 Manufacturing Organizations and Management	72	4
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An in-depth study oriented to the first-line supervisor and other management personnel who are interested in the interrelationships of the various departmental functions and the overall management problems encountered in a manufacturing organization. It includes the establishment of lines of authority, duties and responsibility, and rules for charting an organizational structure. Also reviewed are manufacturing engineering and research, industrial engineering, materials management, process and product control, facilities planning, plant engineering, and manufacturing information systems.

1130 Marketing III	72	4
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This portion of marketing considers the distributive structure, the pricing system, promotional activities, and planning and evaluating of the marketing effort.

1131 Oral Communications	36	3
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Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

1132 Accounting I	72	4
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An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises, including an introduction to payroll accounting. Practical applications of the principles learned are in use.

COURSE DESCRIPTIONS	Hours	Credits
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1133 Principles of Insurance	60	4
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The various types of insurance, including life, health, and accident, hospitalization, fire and storm, burglary, liability, automobile, marine, types of insurance companies, types of coverage, problems, government regulations are covered.

1140 Sales Management	72	5
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Product planning, investigation of the market, sales organizations, sales programs and campaigns, and management of sales and service personnel including selection, training, and supervision.

1141 Stock-Control Systems	60	4
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A study of stock or inventory control systems used by wholesale and retail establishments. Topics include various systems and physical equipment necessary for efficient control. The first two and one-half weeks are devoted to slide rule.

1142 Physical Distribution	72	4
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An overview of physical distribution relative to warehousing, costs, legislation, and physical handling are among the topics.

1143 Principles of Wholesaling	72	4
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This is an advanced study of the evolution, economic status, and management of non-retail marketing, the position of wholesaling in distribution, kinds of wholesaling, types of middlemen, internal organization and operation of wholesalers, trading areas, and an advanced analysis of the relationship between marketing policies of wholesaler and manufacturer and changing patterns of wholesale distributions.

1144 Merchandise Buying	72	4
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Analysis is made of the principles and methods that determine successful merchandise selection. Included in the study are organizations for buying, knowing what to buy, determining where and how to buy, and the aspects of merchandising involved in selling.

1150 Principles of Advertising	72	4
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The purposes of advertising, the economic and social aspects of advertising, slogans, trademarks, idea visualization, the mechanical production of advertisements, the media plan, newspaper advertising, radio advertising, television advertising, direct mail advertising, outdoor advertising, packaging and labeling, and the advertising campaign will be covered.

1151 Human Relations	36	3
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In this course the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

1152 Purchasing and Inventory Control	72	4
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This course provides a practical approach to procurement with regard to price, quality, quantity and delivery. Personal ethics, legal aspects of contracts, records, performance, and foreign procurement standards are discussed in detail. The role of the purchasing section or department, as a member of management's value analysis team, is studied in depth.

1153 Techniques of Merchandise Display	72	4
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The principles of exterior and interior display techniques are applied in practical situations using design elements, color, and arrangement theories. The student constructs various kinds of displays. The basic skills involved in simple showcard lettering as it applies to displays are taught.

COURSE DESCRIPTIONS**Hours Credits****1154 Retail Store Management****72 5**

The principles of operation and management applicable to small stores are studied. Special attention is paid to investigating business opportunities, organizing, financing, and controlling small business. Group projects are investigated by students in areas such as financing, incorporating, and obtaining legal advice.

1155 Techniques of Fashion Buying**72 5**

The background, evolution, economic status, and importance of the fashion industry are covered. Emphasis is placed on the nature of fashion products, purchase motivation, and current practices in the purchasing of fashion.

1160 Business Law I**36 3**

This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

1161 Consumer Economics**36 3**

Study and review of the cost of living and price levels, factors affecting consumer choices, buying practices, management of

COURSE DESCRIPTIONS**Hours Credits**

personal and family finances, the role of government in consumer protection and current consumer problems are included in this course.

1162 Field Project and/or Case Study**180 6**

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

1163 Labor-Management Relations**48 4**

Students explore the development and application of the labor laws and practices that form the basis of modern day industrial relations. Among the topics considered are the history and development of organized labor, Federal labor legislation, labor-management laws, civil rights, state laws and regulations, local regulations. Federal mediation and conciliation service, the organizing drive, the strike, collective bargaining, anatomy of a labor agreement, handling in-shop grievances, and arbitration.

1164 Textiles**48 4**

Textiles, including their fiber content, uses, characteristics and care are studied. Textile law interpretation and labeling regulations are covered. Some emphasis is placed on textiles used for floor, wall and upholstery covering.

Few business or industrial enterprises can function effectively without an adequately trained staff of secretarial and clerical assistants.

With more people seeking office employment and with the growing demand for personnel with advanced education and training, secretarial aspirants today need to be concerned with the acquisition of education beyond high school.

Employers expect more than mere demonstration of acquired proficiencies in taking dictation, typewriting and filing. They seek thoroughly trained employees who have developed initiative, who are capable of assuming responsibility and authority, and who have poise and a wide background of interests essential for advancement.

The secretarial science curricula provide students with the education and training which will enable them to achieve the level of competence demanded in business, industry, government, the legal and medical fields and other institutions.

An attractive feature of these programs is their flexibility. Students who choose to pursue the Associate Degree program have the option of acquiring the necessary competency in shorthand or accounting in order to qualify for many secretarial-related jobs as they progress through the program. Additionally, those particularly interested in employment in the legal or medical fields can select either the Legal Secretarial or Medical Secretarial programs each leading to a Technical Certificate. These programs contain only those courses specifically designed for successful employment in the legal or medical professions.

SECRETARIAL — ADMINISTRATIVE

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
1210 Shorthand I	72	4
1212 Typewriting I	72	3
1213 Technical Communications	60	5
1214 Personal Development	36	3
1220 Shorthand II	72	4
1222 Typewriting II	72	3
1223 Mathematics of Finance	60	5
1224 Records Management	36	3
1230 Shorthand III	72	4

SECRETARIAL SCIENCES

	Hours	Credits
1232 Typewriting III	72	3
1234 Business Communications	60	5
1236 Office Calculating Machines	60	3
1241 Clerical Office Procedures	60	5
1242 Typewriting IV	72	3
1243 Office Management and Procedures	48	3
1251 Business Law I	36	3
1252 Oral Communications	36	3
1253 Human Relations	36	3
1254 Introduction to Data Processing	60	3
1262 Typewriting V	72	3
1263 Business Principles and Organization	36	3
1264 Field Project and/or Case Study	180	6
Electives to Total	216	12

Total Contact Hours: 1,596
Total Credits: 92

Electives:

1211 Accounting I	72	4
1221 Accounting II	72	4
1231 Accounting III	72	4
1240 Shorthand IV	72	4
1250 Shorthand V	72	4
1260 Shorthand VI	72	4
1233 Key Device Training	72	4
1261 Administrative Office Practice	72	4

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward the secretarial field.

1210 Shorthand I 72 4

This is an introductory course in symbol, a b c, or machine shorthand with special emphasis on basic theory, brief forms, and speed in reading from plate notes or machine notes. Dictation is introduced with emphasis placed on writing shorthand outlines or mastery of the machine keyboard.

1211 Accounting I 72 4

An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises, including an introduction to payroll accounting. Practical applications of the principles learned are in use.

1212 Typewriting I 72 3

A course designed for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care and speed development.

COURSE DESCRIPTIONS

Hours Credits

1213 Technical Communications 60 5

Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

1214 Personal Development 36 3

This course enables students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming, wardrobe, personality, and communication skills so they possess the personal qualities considered necessary for success in their chosen field.

1220 Shorthand II 72 4

This course places emphasis on the taking of dictation, the reading of notes, and the developing of transcription skills. The development of skill in formulating new outlines in accordance with the basic principles of manual shorthand is stressed. In machine shorthand, basic theory is reviewed and the development of speed and accuracy through drills and tests is continued. The essentials of good English principles are stressed.

1221 Accounting II 72 4

Topics studied in this course are the partnership, internal control, notes and interest and departmental accounting. A further study of sales procedures and valuation of receivables, inventories and fixed assets.

1222 Typewriting II 72 3

A continuation of Typewriting I with the higher development of vocational competency, includes typing of business letters, forms, manuscripts and tabulations. Speed and accuracy are stressed with emphasis on production typing problems and speed building.

1223 Mathematics of Finance 60 5

The course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

1224 Records Management 36 3

Students are acquainted with the methods and procedures of maintaining business records of various types. Skills are developed in implementing those methods and procedures in practice situations.

1230 Shorthand III 72 4

This course includes a continued review of fundamentals and an emphasis on skill in taking new matter dictation and mailable transcription. Essentials of good English principles are stressed.

1231 Accounting III 72 4

An introduction to branch operation accounting. Further development of skill and knowledge of accounting. To learn journalism and statement presentation of corporated capital stock, receivables, intangible assets, deferred charges, long-term liabilities, temporary investments and long-term investments.

1232 Typewriting III 72 3

This course is designed to improve production typewriting ability in business situations. Problem and production techniques will include complex tabulation, statistical reports, rough drafts, manuscripts and forms.

1233 Key Device Training 72 4

This course is designed to develop a high level of skill in operating key punch, or key to tape, or key to disc equipment. Speed and accuracy are stressed. Prerequisite: 1212

COURSE DESCRIPTIONS

Hours Credits

1234 Business Communications 60 5

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive. Review and additional stress is placed on spelling and vocabulary building considered essential to a competent secretary.

1236 Office Calculating Machines 60 3

Office Calculating Machines is designed to give the student a competent skill level in the application of related problems and the basic operation of adding and calculating machines representative of machines currently being utilized in business offices.

1240 Shorthand IV 72 4

A continuation of Shorthand III (1230).

1241 Clerical Office Procedures 60 5

This course will acquaint the student with opportunities available to clerical workers, including the general qualifications required. It will permit the student to learn such skills as filing, machine transcription, duplicating machine techniques, and receptionist training. An introduction to duties of the Legal, Medical, and Administrative secretary is also provided. Prerequisite: 1222

1242 Typewriting IV 72 3

A continuation of Typewriting III (1232).

1243 Office Management and Procedures 48 3

Management skills and techniques of business offices is emphasized. Human relations, personnel department functions and employment procedures are studied. Experience in applying skills and knowledges gained in office management situations will be provided.

1250 Shorthand V 72 4

A continuation of Shorthand III and IV with much emphasis being placed on technically specialized materials.

1251 Business Law I 36 3

This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

1252 Oral Communications 36 3

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

1253 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

1254 Introduction to Data Processing 60 3

This course covers the history of data processing, scope and significance of data processing, punched card unit records, electronic data processing equipment and basic computer concepts.

1260 Shorthand VI 72 4

This course includes an emphasis on speed building, new matter dictation and some transcription work on the production of mailable copy. The material is designed to acquaint the student with technical terminology, phrases and abbreviations peculiar to certain organizations.

COURSE DESCRIPTIONS**Hours Credits****1261 Administrative Officer Practice****72 4**

This is designed as a finishing course emphasizing the skills, techniques, and attitudes businessmen desire in office workers, including review instruction in human relations, office machines, business correspondence, mailing, filing, telephoning, personal hygiene, dress and applying for a job. Laboratory experience in applying skills and knowledge gained in previous business courses will be provided.

1262 Typewriting V**72 4**

This course stresses the improvement of production techniques which will include: correspondence, business forms, manuscripts, tabulation and secretarial projects. Students will also transcribe machine-recorded dictation. Correct use of grammar, spelling and letter format will be stressed along with the development of a high degree of productivity and skill.

COURSE DESCRIPTIONS**Hours Credits****1263 Business Principles and Organization****36 3**

This course includes an introductory study and analysis of our business system as a whole in relation to our economic society. It includes an introduction to business ownership, organization, principles, problems, management, control, facilities, administration, and practices to develop an understanding of American business enterprises and their functions.

1264 Field Project and/or Case Study**180 6**

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

SECRETARIAL — LEGAL

Technical Certificate

After testing and guidance counseling, courses from the skills advancement studies may be individually prescribed for those students requiring review in communications skills and mathematics to the level considered necessary to enter first quarter courses. It is also possible through testing and guidance counseling to identify students who may qualify for advanced standing because of previous occupational experience or formal training.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
1310 Legal Terminology	24	2
1311 Personal Development	36	3
1312 Typewriting I	72	3
1313 Legal Office Bookkeeping or		
1315 Shorthand I	72	4
1316 Technical Communications	48	4
1320 Business Law I	36	3
1323 Mathematics of Finance	60	5
1322 Typewriting II	72	3
1321 Legal Office Procedures or		
1325 Shorthand II	72	4
1330 Human Relations	36	3
1331 Legal Office Communications	36	3
1332 Typewriting III	72	3
1333 Business Law II	36	3
1335 Shorthand III or		
1336 Office Calculating Machines	72	4
1340 Oral Communications	36	3
1341 Legal Office Practice	60	5
1342 Typewriting IV (Legal)	72	3
1343 Field Project and/or		
Case Study or Elective (Optional)	60	5
1345 Shorthand IV (Legal) or		
Elective	72	4
Total Contact Hours:	984-1,044	
Total Credits:	62-67	

COURSE DESCRIPTIONS

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills and science with supplementary material oriented toward the legal profession.

1310 Legal Terminology 24 2

This course presents the ethics of law, professional conduct and words from Latin prefixes, suffixes, word roots and combining forms. It will teach the student meanings of legal words through the Latin parts, correct spelling of these terms, and the intelligent use of the legal dictionary.

1311 Personal Development 36 3

This course enables students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming, wardrobe, personality and communication skills so they possess the personal qualities considered necessary for employment in their chosen field.

SECRETARIAL — LEGAL

COURSE DESCRIPTIONS

1312 Typewriting I 72 3

This is a course designed for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts, their care and speed development.

1313 Legal Office Bookkeeping 72 4

A course designed to introduce the basic principles of bookkeeping as utilized primarily in a legal office setting. This course includes the principles of debit and credit, double entry bookkeeping, use of journals (particularly combined journal) and analyzing transactions. Also included are the use of ledgers, posting procedures, cash and accrual bases of accounting, handling petty cash, banking procedures, payroll, work sheets, balance sheets, and income statements.

1315 Shorthand I 72 4

This is an introductory course in symbol, a b c, or machine shorthand with special emphasis on basic theory, brief forms, and speed in reading from plate notes or machine notes. Dictation is introduced with emphasis placed on writing shorthand outlines or mastery of the machine keyboard.

1316 Technical Communications 48 4

Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

1320 Business Law I 36 3

This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

1321 Legal Office Procedures 72 4

This course is designed to provide a basic understanding of the secretarial and bookkeeping duties and responsibilities as pertinent to the legal profession. It includes legal correspondence and records, client files, filing, financial administration, correct court procedures with clients, courts, and professional agencies. It also includes considerations for desirable personality traits, interpersonal relationships, and attitudes within the law office.

1322 Typewriting II 72 3

A continuation of Typewriting I with the higher development of vocational competency, includes typing of business letters, forms, manuscripts and tabulations. Speed and accuracy are stressed with emphasis on production typing problems and speed building.

1323 Mathematics of Finance 60 5

This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

COURSE DESCRIPTIONS**Hours Credits****1325 Shorthand II 72 4**

This course places emphasis on the taking of dictation, the reading of notes, and the developing of transcription skills. The development of skill in formulating new outlines in accordance with the basic principles of manual shorthand is stressed. In machine shorthand, basic theory is reviewed and the development of speed and accuracy through drills and tests is continued. The essentials of good English principles are stressed.

1330 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

1331 Legal Office Communications 36 3

Communications skills development directed toward the legal office are studied. Oral and written communications directed specifically toward the legal profession are emphasized.

1332 Typewriting III 72 3

This course is designed to improve production typewriting ability. Problem and production techniques will include complex tabulation, statistical reports, rough drafts, manuscripts and legal documents.

1333 Business Law II 36 3

This course is a continuation of Business Law I with emphasis on topics which include bailments, secured transactions, partnerships and corporations, property, wills and trusts, insurance, suretyship, guaranty and bankruptcy.

1335 Shorthand III 72 4

This course is designed to develop student competence in specialized legal dictation and transcription of legal correspondence, forms and documents.

COURSE DESCRIPTIONS**Hours Credits****1336 Office Calculating Machines 72 4**

Office Calculating Machines is designed to give the student a competent skill level in the application of related problems and the basic operation of adding and calculating machines representative of machines currently being utilized in business offices.

1340 Oral Communications 36 3

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

1341 Legal Office Practice 60 5

This is designed as a finishing course emphasizing the skills, techniques and attitudes businessmen desire in office workers, including review instruction in human relations, office machines, business correspondence, mailing, filing, telephoning, personal hygiene, dress and applying for a job. Laboratory experience in applying skills and knowledges gained in previous business courses will be provided in handling legal forms and procedures common to a legal office. Included will be research assignments, maintaining legal calendars and files.

1342 Typewriting IV (Legal) 72 3

This course is designed to improve production typewriting ability in legal situations. The preparation and familiarization of legal documents will be emphasized.

1343 Field Project and/or Case Study 60 5

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

1345 Shorthand IV (Legal) 72 4

This course is designed to develop student competence in specialized legal dictation and transcription of legal correspondence, forms and documents with emphasis on the student learning to construct shorthand outlines of legal terms.

SECRETARIAL — MEDICAL

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
1410 Medical Linguistics	48	2
1411 Personal Development	36	3
1412 Typewriting I	72	3
1413 Medical Office Bookkeeping	48	3
1414 Technical Communications	48	4
1420 Office Calculating Machines	48	3
1421 Medical Office Procedures	60	4
1422 Typewriting II	72	3
1423 Mathematics of Finance	60	5
1430 Applied Psychology	36	3
1431 Medical Filing and Indexing	36	3
1432 Machine Transcription, Medical	72	3
1433 Medical Office Management	48	3
1434 Medical Office Communications	48	4
Total Contact Hours:	732	
Total Credits:	46	

COURSE DESCRIPTIONS

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward the medical profession.

1410 Medical Linguistics 48 2

This course presents the ethics of medicine, professional conduct and words from Greek and Latin prefixes, suffixes, word roots and combining forms. It will teach the student meanings of medical words through the Greek, and Latin parts, correct spelling of these terms, and the intelligent use of the medical dictionary.

1411 Personal Development 36 3

This course enables students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming, wardrobe, personality and communication skills so they possess the personal qualities considered necessary for employment in their chosen field.

1412 Typewriting I 72 3

This course is designed for beginners in typewriting. It covers the development of the fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

SECRETARIAL — MEDICAL

COURSE DESCRIPTIONS

Hours Credits

1413 Medical Office Bookkeeping 48 3

A course designed to introduce the basic principles of bookkeeping as utilized primarily in a medical office setting. This course includes the principles of debit and credit, double entry bookkeeping, use of journals (particularly combined cost journal) and analyzing transactions. Also included are the use of ledgers, posting procedures, cash basis of accounting, handling petty cash, banking procedures, payroll, depreciation of accounts, balance sheets, work sheets, and income statements.

1414 Technical Communications 60 5

Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

1420 Office Calculating Machines 48 3

Office Calculating Machines is designed to give the student a competent skill level in the application of related problems and the basic operation of adding and calculating machines representative of machines currently being utilized in business offices.

1421 Medical Office Procedures 60 4

This course is designed to provide a basic understanding of the secretarial and bookkeeping duties and responsibilities as pertinent to the medical offices and health care agencies. It includes medical correspondence and records, insurance forms, case histories of patients, filing, financial administration, correct contact procedures with patients, hospitals, and professional agencies. It also includes considerations for desirable personality traits, interpersonal relationships, and attitudes within the medical office. Co-requisite: 1422

1422 Typewriting II 72 3

A continuation of Typewriting I with the higher development of vocational competency, includes typing of business letters, forms, manuscripts and tabulations. Speed and accuracy are stressed with emphasis on production typing problems and speed building.

1423 Mathematics of Finance 60 5

This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

1430 Applied Psychology 36 3

This course presents a study of psychological behavior in medical relationships. Information concerning human needs and behavior in health and illness is designed to improve individual attitudes, productivity and personal morale in working situations.

1431 Medical Filing & Indexing 36 3

This course is designed as a study of medical terminology, coding systems and methods of filing and indexing medical information.

COURSE DESCRIPTIONS	Hours	Credits
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1432 Machine Transcription, Medical	72	3
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This course is designed to provide a basic understanding of the techniques of dictation and transcription used by the medical assistant. Transcription in the following fields of medicine is studied: internal medicine, surgery, obstetrics, gynecology, pediatrics, orthopedics, otorhinolaryngology, urology, ophthalmology, neurology, psychiatry and dermatology. Prerequisites: 1410, 1422

COURSE DESCRIPTIONS	Hours	Credits
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1433 Medical Office Management	48	3
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This course supplies the background for organization and management of a physician's office and an in-depth study of governmental types of health insurance coverage.

1434 Medical Office Communications	48	4
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Communications skills development directed toward the medical office are studied. Human relations necessary in medical office communications are emphasized.

The human services field has undergone marked shifts in emphasis during the past decade. The student in the Social Service Technology program acquires knowledge of the varied techniques used in the human services, including growth and development of the person, various community resources, governmental structures as it relates to human services, basic principles of group and societal behavior, and communication skills. Practical work experience in a community service agency under supervision is given as a part of the College program. The student must enjoy and demonstrate empathy for people and must be in good physical and mental health.

Employment opportunities may be found as interviewers for the Department of Public Welfare or as social work aides in public and private school systems, Children's Aid Society, hospitals, nursing homes, public schools, mental hospitals, community action programs, or as community liaison workers in other human services programs.

SOCIAL SERVICE TECHNOLOGY

Associate Degree

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
1510 Fundamental Arithmetic	24	2
1511 Technical Communications I	36	3
1512 Typewriting II	48	3
1513 Occupational Orientation	36	2
1514 Human Relations	36	3
1515 Business Principles and Organization	36	3
1520 Typewriting II	48	3
1521 Fundamentals of Algebra	36	3
1522 Office Calculating Machines	48	3
1523 Records Management	24	2
1530 Production Typewriting	48	3
1531 Accounting I	48	4
1532 Introduction to Data Processing	48	3
1533 Office Practice	72	4
1540 Basic Concepts in Social Service	36	3
1541 Accounting II	48	4
1542 Business Communications	36	3
1550 Business Law I	36	3
1551 Urban Government and Politics	36	3
1560 Field Project and/or Case Study	120	6
1561 Social Resources of the Community	48	3
1562 Technical Reporting	36	3
1592 Psychology	36	3
1593 Social Problems	36	3
1594 Consumer Economics	36	3
1590 Technical Communications II or		
1591 Oral Communications	24	2
General electives to total	132	11

Total Contact Hours: 1,248
Total Credits: 91

SOCIAL SERVICE TECHNOLOGY

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills and mathematics skills with supplementary material oriented toward the industrial management field.

1510 Fundamental Arithmetic 24 2

The fundamentals of addition, subtraction, multiplication and division are reviewed including both common and decimal fractions. Percentage, ratio and proportion, measurement and powers and roots are studied.

1511 Technical Communications I 36 3

After individual testing to determine specific language needs, this course provides for extensive training in general writing, listening, reading and speaking. Emphasis is placed on the use of logic in the development of written and oral ideas.

1512 Typewriting I 48 3

A course for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

1513 Occupational Orientation 36 2

Career pursuits are investigated in the general area of study of the student's interests and enrollment and include interviews, study of occupational information and its sources, testing, exploration of job opportunities and research of specific jobs and fields.

1514 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

COURSE DESCRIPTIONS

1515 Business Principles and Organization 36 3

This course includes an introductory study and analysis of our business system as a whole in relation to our economic society. It includes an introduction to business ownership, organization, principles, problems, management, control, facilities, administration, and practices to develop an understanding of American business enterprises and their functions.

1520 Typewriting II 48 3

A continuation of Typewriting I with the higher development of vocational competency, includes typing of business letters, forms, manuscripts and tabulations. Speed and accuracy are stressed with emphasis on production typing problems and speed building.

1521 Fundamentals of Algebra 36 3

Algebra with emphasis on fundamental operations with signed numbers, solving linear equations and basic geometric and trigonometric relationships is made.

COURSE DESCRIPTIONS	Hours	Credits
1522 Office Calculating Machines	45	3

Office Calculating Machines is designed to give the student a competent skill level in the application of related problems and the basic operation of adding and calculating machines representative of machines currently being utilized in business offices.

1523 Records Management	24	2
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This course covers basic principles and procedures of records storage and control, methods and systems for storing and retrieving special records and managing the records system.

1530 Production Typewriting	48	3
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Production typewriting stresses the improvement of production techniques which will include: correspondence, business forms, manuscripts, tabulation and secretarial projects. Students will also transcribe machine-recorded dictation. Correct use of grammar, spelling and letter format will be stressed along with the development of a high degree of productivity and skill. Prerequisite: 1520

1531 Accounting I	48	4
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An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises. Included are practical applications of the principles learned.

1532 Introduction to Data Processing	48	3
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This course covers the history of data processing, scope and significance of data processing, punched card unit records, electronic data processing equipment and basic computer concepts.

1533 Office Practice	72	4
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This is designed as a finishing course emphasizing the skills, techniques, and attitudes businessmen desire in office workers, including units of instruction in human relations, office machines, business correspondence, mailing, filing, telephoning, personal hygiene, dress and applying for a job. Laboratory experience in applying skills and knowledges gained in a previous business course will be provided. Prerequisite: 1520

1540 Basic Concepts in Social Service	36	3
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An introductory course that consists of concepts, principles and processes encountered by social service workers, with questions of motivation, acceptance and attitudes. Includes techniques of listening and interviewing.

1541 Accounting II	48	4
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An introduction to accounting for payroll, the partnership, internal control, notes and interest and departmental accounting. A further study of sales procedures and valuation of receivables, inventories and fixed assets.

1542 Business Communications	36	3
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The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

COURSE DESCRIPTIONS	Hours	Credits
1550 Business Law I	36	3

This course includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

1551 Urban Government and Politics	36	3
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Development, forms, functions, powers and problems of urban government in the United States. Emphasis on metropolitan areas, such as Chicago, and inter-governmental relations; examination of local politics and pressure group activity, administrative organization and fiscal responsibilities.

1560 Field Project and/or Case Study	120	6
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The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

1561 Social Resources of the Community	48	3
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This course provides an opportunity for the social work paraprofessional to become familiar with the range of facilities and services provided by a wide variety of agencies. He will learn proper referral methods and intake procedures for those agencies which provide services for clients with whom he is likely to come into contact.

1562 Technical Reporting	36	3
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Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

1590 Technical Communications II	24	2
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Intensive training in clear, effective writing and other forms of communications is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

1591 Oral Communications	24	2
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Through intensive training in formative, persuasive, and special purposes presentations, speech skills are developed.

1592 Psychology	36	3
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This course presents a study of psychological behavior and research within employer-employee relationships. Information concerning human needs and behavior in business and industry is designed to improve individual attitudes, productivity and personal morale in working situations.

1593 Social Problems	36	3
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The students are guided in the analysis of contemporary social problems such as ecology, crime, drug abuse, over-population and urban life with emphasis on community problems and cultural differences.

1594 Consumer Economics	36	3
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Study and review of the cost of living and price levels, factors affecting consumer choices, buying practices, management of personal and family finances, the role of government in consumer protection and current consumer problems are included in this course.

COMMERCIAL ART TECHNOLOGY

The objective of this curriculum is to prepare men and women for employment as commercial artists in many types of businesses. They may be employed preparing art designs or illustrations for advertisers; television commercials, cartoons, industrial and advertising films; they may be involved in fashion illustration, package design, wallpaper and textile design, display, poster, brochures and other publications, direct mail advertising and window display for retail department stores. Many such artists are self-employed; others work for manufacturers, department stores, advertising agencies, television stations, sign shops and newspapers.

The commercial artist produces art for commerce, and the need for competent people grows with business and industry. He is an interpreter of ideas and is capable of translating the thought of the client, or a business associate, into a graphic statement.

Prior art training or experience is desirable, but not necessary, as long as the applicant displays evidence of art ability.

COMMERCIAL ART TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
1810 Composition and Design I	90	4
1811 Illustration I	90	4
1812 Basic Drawing I	90	4
1813 Art Careers Orientation	40	3
1820 Composition and Design II	90	4
1821 Illustration II	90	4
1822 Basic Drawing II	90	4
1823 Communications Development	40	3
1830 Typography	90	4
1831 Illustration III	90	4
1832 Photography I	120	5
1833 Science of Art Materials	90	4
1834 Human Relations	40	3
1840 Layout Design I	90	4
1841 Illustration IV	90	4
1842 Photography II	120	5
1843 Life Drawing I	90	4
1844 Math for Artists	40	3
1850 Layout Design II	90	4
1851 Illustration V	90	4
1852 Photography III	120	5

	Hours	Credits
1853 Life Drawing II	90	4
1854 Business Communications	40	3
1860 Keylining I	90	4
1861 TV Art Design	90	4
1862 Psychology	40	3
1863 Oral Presentations	40	3
1870 Keylining II	90	4
1871 TV and AV Design	90	4
1872 Seminar in Occupations	40	3
1880 Field Project and/or Survey	180	8
Electives to total	180	8

Total Contact Hours: 2,750
Total Credits: 131

Electives

1881 Media and Occupational Illustrations	90	4
1882 Sequential AV and TV Art	90	4
1883 Specialized Layout and Keyline	90	4

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward commercial art technology.

1810 Composition and Design I 90 4

Deals with two-dimensional concept and shapes. Introduces the student to flat pattern design shapes. Gives him instruction in the use and mixing of color, with the varied techniques of color. Makes him aware of texture and value.

1811 Illustration I 90 4

An introductory course in media, water color, tempera, polymer and inks.

1812 Basic Drawing I 90 4

The student will develop basic drawing skills with the pencil, charcoal, water, crayon, etc., and will deal with the quality of line, the mass of volume, and control of values.

1813 Art Careers Orientation 40 3

Art pursuits are investigated in the general area of study of the student's interest and enrollment. Study includes research of specific jobs or field opportunities. Activities include interviews, collections of art careers information, and field observation.

1820 Composition and Design II 90 4

The class will deal with the three-dimensional concepts of the visual image, color optics and color dynamics, with the illusion of 3D and the actuality of the 3D form and the use, limitations and physical manufacture of 3D forms for commercial use.

COURSE DESCRIPTIONS	Hours	Credits
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1S21 Illustration II	90	4
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There will be concentration in aqua-media with exploration of various techniques with the brush to show the value and advantage in using each technique and medium.

1S22 Basic Drawing II	90	4
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Basic Drawing II provides further experience in the use of felt pens, chalks, conte crayon, pen and ink with the emphasis in the quality of descriptive sketching. It will show the difference between the sketch used as finished art and the sketch used as a layout for the illustration.

1S23 Communication Skills Development	40	3
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On an individualized self-paced basis, each student will cover written grammar, and vocabulary development oriented toward his occupation.

1S30 Typography	90	4
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Introduction to type, what it is, sizes, different methods, spacing, line count and lab experience in lettering type faces for layout.

1S31 Illustration III	90	4
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Concentrated work in black and white illustration with techniques in pen and ink, dry brush, chalks, designers colors, pencil with the use of mechanical materials. Some work in line-converted photos and their use. The course will also show the use of overlays in using a second, or more, color to black and white ad work.

1S32 Photography I	120	5
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A basic preparatory course in photography fundamentals. Content covers the theory and practical applications of basic camera types. The purpose of the course is to teach its relationship to the commercial field of art and illustrative techniques.

1S33 Science of Art Materials	90	4
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The student will study the physical properties and make-up of pigments, binders and media. The difference between media such as watercolor, gouache and polymer will be studied. The chemistry and physical makeup of different inks and their particular use will be related to the various forms of art supports and the most common types of paper used for reproduction printing. Areas of concern are supports, media, equipment and supplies.

1S34 Human Relations	40	3
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This course is a survey of social sciences that help explain human behavior and motivation. Appropriate materials from psychology and social problems. Such information is designed to help individuals better understand themselves and society.

1S40 Layout Design I	90	4
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This course deals with the basic concepts of layout, how they relate to finished art and the use of various media and techniques of layout. Familiarization with the materials and layout techniques as they relate to the various advertising media are explored.

1S41 Illustration IV	90	4
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Techniques and handling of airbrush rendering and photo retouch are covered. The student will have experiences in both black and white and color with extensive use of masking technique and supplementary brush work. Combined media will be used.

1S42 Photography II	120	5
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The study of photography as a tool for sequential story telling.

46/COMMERCIAL ART TECHNOLOGY

COURSE DESCRIPTIONS	Hours	Credits
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1S43 Life Drawing I	90	4
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The anatomical study of the undraped figure, its uses in the layout form and the finished art version are included. Life Drawing I deals with the natural movements and positions of the muscles and skeleton and how each relates to the other. The study of line figure versus the shaped figure is covered.

1S44 Math for Artists	40	3
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This course stresses the fundamental operations through job estimating, through diagnostic tests. Part or all may be assigned to Skills Advancement.

1S50 Layout Design II	90	4
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The emphasis will be upon the comprehensive layout and its relation to the finished printed product. All the efforts will be directed toward developing the student's capacity for neat, well-designed layouts.

1S51 Illustration V	90	4
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The fifth course in illustration will be directed toward student interest in specific media. It will afford an opportunity to develop a proficiency in one area or possibly two.

1S52 Photography III	120	5
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Photo procedures and their relations to the reproductive processes and product photos.

1S53 Life Drawing II	90	4
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The draped figure versus the undraped figure. The action of the figure upon clothing and the use of figure sketching to finished sketch and illustration.

1S54 Business Communications	40	3
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The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, prospectuses, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive, and are common in the Commercial Art field.

1S60 Keylining I	90	4
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Analysis of requirements and practical lab work in the preparation of art and mechanical operations for camera copy. A thorough indoctrination in methods and materials. A specific effort will be made to familiarize the student with type selection, its relation to visual impact of final product.

1S61 TV Art Design	90	4
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The student will study and execute visual art that is to be used for TV as direct art, slides, or video tape. Techniques, field size, value and hue control and use of overlays will be studied. Both advertising and entertainment art will be executed to demonstrate the scope of TV oriented visuals. Story boards will be executed for all course projects.

1S62 Psychology	40	3
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A study of psychological principles and methods as applied to art layout and color. Emphasis is given to student demonstrations and experiments designed to show human behavior when perception of symbols, patterns and colors occur.

1S63 Oral Presentations	40	3
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This course presents intensive training in art product presentations. Training helps prepare students to present their product to prospective clients.

COURSE DESCRIPTIONS	Hours	Credits
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1870 Keylining II	90	4
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Keylining II will concentrate on the practical preparation of keylines in relation to the printer, agency and client. Classroom discussion will deal with practical consideration of keylining. The responsibility of the artist and the printer as to what is to be done by whom and which can best do it economically. Laboratory work will be concerned with producing accurate keylines ready for camera.

1871 TV and AV Design	90	4
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Concentration is placed on visual aids with further study of techniques and art forms used as visual aids by educational institutions, etc. The student will not only produce art but will execute projects in finished forms as film strips, slide films and TV tapes.

1872 Seminars in Occupations	40	3
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The employment market, job interviews, portfolios and resumé preparations are examined by the student with placement services provided.

COURSE DESCRIPTIONS	Hours	Credits
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1880 Field Project and/or Survey	180	8
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Occupational experience is provided for the student in the environment of his specific skills.

1881 Media and Occupational Illustrations	90	4
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Individual projects are assigned to provide experience of assembling a complete project. Emphasis will be coordinated with the field project.

1882 Sequential AV and TV Art	90	4
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Individual projects are assigned to provide experience of assembling a complete project. Emphasis will be coordinated with the field project.

1883 Specialized Layout and Keyline	90	4
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Individual projects are assigned to provide experience of assembling a complete project. Emphasis will be coordinated with the field project related to specialized layout and keyline work.

Photography is used for an ever increasing variety of tasks, from micro-photography for computer use to plates for electronic circuits. At the same time, the use of the visual in advertising, TV, industrial training and education is expanding and increasing the demand for commercial and industrial photography.

This program emphasizes technical skills, from the camera to the darkroom. As the student becomes comfortable with his skill, composition and technique are stressed to insure capability of producing materials meeting commercial and industrial standards.

COMMERCIAL AND INDUSTRIAL PHOTOGRAPHY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

	Hours	Credits
1611 Photo Careers Orientation	10	2
1612 Communications Skills Development	60	3
1614 Introduction to Photography	120	6
1615 Oral Presentations	40	4
1624 Psychology for Photographers	30	3
1625 Science of Photo Materials	40	3
1626 Studio Lighting and Set-up Techniques	95	4
1627 Darkroom Techniques	100	5
1628 Seminar in Occupations	30	2
1633 Business Communications for Photographers	40	3
1634 Sequential Photography	120	5
1635 Product Photography	120	5
1636 Mathematics for Photographers	80	4
1641 Illustration IV (Retouch)	95	4
1642 Industrial and Commercial Photo Techniques	115	5
1644 Special Darkroom Techniques	100	5
1645 Composition and Design	95	4
1654 Volume Custom Film and Print Production	105	5
1655 Portrait Photography	95	5
1656 Field Survey	60	3
1666 Camera Techniques and Lighting for Color	100	4
1667 Color Film and Print Process	100	5
1668 Specialized Commercial Photography	95	4
1672 Field Project and/or Survey Elective in Photography	115	6
	115	6
Total Contact Hours:	2,075	
Total Credits:		105

Electives in Photography:

1673 Special Effects in Color	115	6
1674 Color Correction	115	6
1675 Mural Enlargements	115	6

COMMERCIAL AND INDUSTRIAL PHOTOGRAPHY

COURSE DESCRIPTIONS

Hours Credits

Skill Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject materials is on communications skills, mathematics skills, and science, with supplementary material oriented toward commercial and industrial photography.

1611 Photo Careers Orientation 10 2

Career pursuits are investigated in the general area of study of the student's interests and enrollment and includes interviews, study of occupational information and its sources, testing, exploration of job opportunities and research of specific jobs and fields.

1612 Communication Skills Development 60 3

On an individualized self-paced basis, each student will cover written grammar and vocabulary development oriented toward his occupation.

1614 Introduction to Photography 120 6

This basic preparatory course in photographic fundamentals covers the theory and practical applications of basic camera types. Picture taking, exposure determination, processing and introduction to the media of the field are introduced.

1615 Oral Presentations 40 4

Communication skills needed for specific occupations are covered with emphasis on the skill area most needed for that occupational skill.

1624 Psychology for Photographers 30 3

A study of psychological principles and methods as applied to photographic composition, content and color. Emphasis is given to student demonstrations and experiments designed to show human reactions when the chosen perception occurs.

1625 Science of Photo Materials 40 3

The student will study the different types of films, papers, chemicals, filters and cameras used in photography. The use and purpose of all photo materials and equipment will be studied. The advantages and disadvantages of different papers and films will be studied.

1626 Studio Lighting and Set-Up Techniques 95 4

This course is designed to familiarize and train the student in studio lighting and set-up techniques. The use of lighting systems such as Color-Tran, iodized quartz lights and 3200 kelvin lamps will be studied. Creation of special effects in lighting will be studied. Techniques in set-up will include such things as infinite backgrounds, scrims and backdrops.

1627 Darkroom Techniques 100 5

The techniques of film processing, print processing is the main concern of this course. Special emphasis will be placed upon utilization of proper developers in film processing and the ability to produce clean correctly developed negatives. The use of enlargers, correct filter selection, and dodging or burning of prints

COURSE DESCRIPTIONS

Hours Credits

and correct development of prints will also be of prime concern. Special emphasis will be placed upon producing a print for specific uses such as salon prints, prints for direct reproduction and prints for photo retouching.

1625 Seminars in Occupation 30 2

In this course which is designed to equip the student for a smooth transfer from training to the world of work and to help the student decide upon an area of specialization, resource persons representing industrial and business organizations discuss locating jobs, job applications and interviews, preparation of portfolios and credentials, human relations, employer-employee expectations, personal grooming, labor laws, union memberships, taxes, insurance liability, trade and professional associations' and organizations' occupational journals and further training for job upgrading.

1633 Business Communications for Photographers 40 3

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive; and relates to occupational skill in photography.

1634 Sequential Photography 120 5

This is a course in sequential photography concerned with the use of the photo as an illustrative tool for story telling.

1635 Product Photography 120 5

Photography procedures in product photography and their relationship to the reproductive process.

1636 Mathematics for Photographers 50 4

On a self-paced format the student will cover the concepts of percentage, ratio, proportion, measurement, powers and roots. The student will continue into algebraic concepts introduced along with signed numbers and basic geometric and trigonometric relationships.

1641 Illustration IV (Retouch) 95 4

This course covers techniques and handling of airbrush renderings and photo retouch. Students will have experience in both black-and-white and color. Extensive use of masking techniques and supplementary brush work and use of combined media are included.

1642 Industrial and Commercial Photo Techniques 115 5

This course is designed to teach the techniques needed for industrial and commercial photography. Special lighting techniques such as photography with existing light, electronic flash and slave lighting, painting with light, set up lighting, and use of reflected light in business, outdoors and in manufacturing plants will be studied. The photographic techniques of specialized photography such as wide angle, anamorphic lens shots, fish eye photography, action shots and double exposure will also be studied. The student will receive experience in taking crowd and group shots as used in PR photography.

1644 Special Darkroom Techniques 100 5

A variety of films and photographic papers and their processes are experienced with emphasis on lithographic films and techniques. Prerequisite: 1627

1645 Composition and Design I 95 4

The student studies the basic elements of two-dimensional, flat pattern design and the use of these basic elements in creative work as related to composition and design.

COURSE DESCRIPTIONS

Hours Credits

1654 Volume Custom Film and Print Production 105 5

This course is devoted to the student acquiring experience in processing techniques needed for quantity production of roll and cut film of all format sizes. The use of various developers, replenishers, etc., used in film processing will be studied. The student will acquire skills and knowledge of technique in quantity printing with both contact printer and enlarger needed. Gang development of prints will be stressed as a darkroom technique. Dark-room techniques in quality printing of salon prints, mural prints, portraits, prints for direct use for reproduction and photo retouching will be studied and executed in darkroom projects. Prerequisite: 1627

1655 Portrait Photography 95 5

Various aspects of portraits photography will be studied including the use of lighting and props. Various types of portraits, such as posed shots, action shots, informal, family groups and kidnapping, will be studied through project execution.

1656 Field Survey 60 3

Occupational experience is arranged for the student in the specific area of training. Continued guidance occurs throughout the field project.

1666 Camera Techniques and Lighting for Color 100 4

The student will study and develop competency in lighting for color with particular emphasis upon temperature control as it is effected by color balance. Special techniques such as posturized color effects in lighting and use of colored spots will be studied. Prerequisite: 1626

1667 Color Film and Print Process 100 5

The student will study and develop skills in the processing of color films (both color negatives and transparencies) and type "C" color prints. Special interest will be focused upon temperature control and cyclic time for processing. Experience in color balance control will be of prime concern for printing. Both contact and enlarging work will be executed for this course. Prerequisites: 1627, 1644

1668 Specialized Commercial Photography 95 4

This course is designed to give the student detailed, broad knowledge and experience in a specific area of his choice. This course is coordinated with other courses so that, whenever possible, he may utilize his skills and knowledge by on-the-job experience in the business world. Areas of particular interest are architectural, journalistic, aerial, portrait and industrial photography.

1672 Field Project and/or Survey 115 6

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

1673 Special Effects in Color 115 6

Individual projects with an emphasis in the specific skill are arranged. Students complete projects that simulate occupational area. The project is coordinated with the field project.

1674 Color Correction 115 6

Individual projects with an emphasis in the specific skill are arranged. Students complete projects that simulate occupational area. The project is coordinated with the field project.

1675 Mural Enlargements 115 6

Individual projects with an emphasis in the specific skill are arranged. Students complete projects that simulate occupational area. The project is coordinated with the field project.

The creative work of interior designers and decorators is being used more and more by a variety of firms and businesses.

Interior design technicians plan the arrangement of interior space and coordinate the selection of furniture, draperies, floor coverings, and interior accessories.

They may work on the interiors of residences, offices, commercial buildings, ships or aircraft. Some interior design technicians may work on stage sets for motion picture or television studios; they may design furniture and accessories to be used in interiors, and others may redesign interiors of old structures.

The graduate of this program will be trained to work as an interior design assistant or trainee on interior decoration firms, as a sales consultant for furniture stores and home furnishings departments, as a buyer-trainee for home furnishings departments or as a painting and decorating advisor.

Some hotel and restaurant chains have full-time interior design personnel. Interior designers and decorators also are employed by paint and decorating contractors, architects, floor coverings firms, industrial design firms, office furniture stores and textile manufacturers. Both men and women will find rewarding careers in this area.

INTERIOR DESIGN TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

		Hours	Credits
2010	Composition and Design I	60	4
2011	Color Theory	72	4
2012	History of Art I	36	3
2013	Fundamentals of Structural Design I	72	4
2014	Technical Communications I	36	2
2020	Composition and Design II	60	4
2021	Textiles I	48	3
2022	Fundamentals of Interior Design I	48	3
2023	Fundamentals of Structural Design II	72	4
2024	Technical Communications II	36	2
2030	Occupational Communications	36	2
2031	Textiles II	72	4
2032	Fundamentals of Interior Design II	48	3
2033	Human Relations	48	3

INTERIOR DESIGN TECHNOLOGY

		Hours	Credits
2034	Mathematics of Finance	60	5
2040	Consumer Education of Interiors	48	3
2041	Furniture Selection and Arrangement I	72	4
2042	Advanced Textiles	72	4
2043	Psychology	36	3
2044	Consumer Economics	36	3
2050	Applied Interior Design I	96	5
2051	Display I	84	5
2052	Retailing	36	3
2053	Furniture Selection and Arrangement II	48	3
2060	Applied Interior Design II	96	5
2061	Display II	60	3
2062	Salesmanship	36	3
	Elective, Graphics and Media	36	3

Total Contact Hours: 1,560
Total Credits: 97

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward interior design technology.

2010 Composition and Design I 60 4

The student studies the basic elements of two-dimensional design and the use of these basic elements in creative work as related to the field of interior design. The principles of drawing flat elevations are studied.

2011 Color Theory 72 4

This course includes an intensive exploration of color — theory, expression, range, key and psychology — as related to the individual and family with respect to living with color. Practical application of problems in the use of color is covered.

2012 History of Art I 36 3

The student studies art from prehistoric times through Greek and Roman times. A view of the art of different eras in light of cultural backgrounds and interrelation of major periods of art history is presented. A study of the major changes reflected in the art of the times is included.

2013 Fundamentals of Structural Design I 72 4

The fundamentals of drafting and use of drafting equipment as applied to interior design is studied. Lettering, dimensioning and execution of floor plans are covered. A plan for a client is developed by the individual student. The development of exterior styles is studied.

COURSE DESCRIPTIONS

2014 Technical Communications I 36 2

On an individualized, self-paced program, the student will cover writing, reading, and speaking skills oriented toward occupational needs.

2020 Composition and Design II 60 4

Three-dimensional concepts as related to perspective drawings are covered. Students learn to develop renderings of actual rooms for realistic presentation to clients.

2021 Textiles I 48 3

The student studies textile fibers, weaves, finishes and dyeing processes. From this basic information he learns to identify these qualities in actual fabric samples.

2022 Fundamentals of Interior Design I 48 3

The student learns the application of the elements and principles of design, as related to interiors. Window treatments, lighting, accessories, and the art of picture framing and hanging are also covered.

2023 Fundamentals of Structural Design II 72 4

Students develop specifications, door and window schedules of elevations for their own floor plans. Building materials for floors and walls are covered.

2024 Technical Communications II 36 2

On a self-paced basis effective technical writing is emphasized with logical development of information presented for clearly expressing occupational problems, procedures and solutions.

2030 Occupational Communications 36 2

Communication skills needed for specific occupations are covered with emphasis on the skill area most needed for that occupational skill.

2031 Textiles II 48 3

This course places emphasis on textiles as they relate to the field of interior decoration. Physical properties and characteristics of carpets, wall coverings, upholstery and draperies are covered.

2032 Fundamentals of Interior Design II 48 3

A concentration on furniture styles and their development.

2033 Human Relations 48 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an inter-dependent society.

2034 Mathematics of Finance 60 5

This course stresses the fundamental operations and their applications to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistics.

2040 Consumer Education for Interiors 48 3

The general factors influencing quality buying for interiors are studied. Materials and trends are examined in relation to needs of consumers.

COURSE DESCRIPTIONS

2041 Furniture Selection and Arrangement I 72 4

The students study the determination of quality in the selection of furniture, types of woods and the principles of furniture arrangement.

2042 Advanced Textiles 72 4

Practical problems are given on the proper method of estimating and installing carpet, drapery and wall coverings.

2043 Psychology 36 3

This course presents a study of psychological behavior and research within employer-employee relationships. Information concerning human needs and behavior in business and industry is designed to improve individual attitudes, productivity and personal morale in working situations.

2044 Consumer Economics 36 3

Study and review of the cost of living and price levels, factors affecting consumer choices, buying practices, management of personal and family finances, the role of government in consumer protection and current consumer problems are included in this course.

2050 Applied Interior Design I 96 5

Analysis of each room's functional and special needs, with attention given to the arrangement of furniture and fixtures in these rooms.

2051 Display I 84 5

Students study the basic principles governing displays and the special techniques and equipment required in carrying out display work.

2052 Retailing 36 3

Topics covered are business location, building fixtures and equipment, store layout, retail management organization, purchasing procedures, merchandise discounts and ordering policies, product inventory control systems, planning the merchandise budget, receiving, checking and marketing merchandise, retail store promotions, pricing, retail store services and trends in marketing.

2053 Furniture Selection and Arrangement II 48 3

Students receive practical application in analyzing existing conditions of interior or areas. They work with basic floor plans and assigned furnishings to be arranged with advancement to floor plans of various types.

2060 Applied Interior Design II 96 5

Students carry out actual design projects in their entirety with complete description of the background of the client. This includes a formal presentation, defense of design presented and the responsibility for meeting a completion date.

2061 Display II 60 3

A continuation of Display I (2051) with emphasis placed on the practical application of the principles and techniques learned for creative display work.

2062 Salesmanship 36 3

This is a survey course of sales and the techniques of selling a service. Equal stress is placed on selling the product as well as the service. The course covers all phases of the sales including approach, demonstration, close and departure.

LIBRARY RESOURCE AIDE

There is a growing need for men and women to support and assist the professional librarian by assuming many technical and clerical responsibilities which are essential to the operation of a modern library or a school learning resource center. Because employment opportunities are favorable, the library aide may find work in the large urban metropolis or the relatively small community.

The library aide may support or assist the professional in library circulation, referencing, technical processes, audio-visual, children's services, clerical activities and other related activities.

Employment may be found with school, college, university, business and industry, governmental or public libraries as a library aide or assistant. The library resources aide curriculum is a three-quarter program leading to a technical certificate.

LIBRARY RESOURCE AIDE

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
2410 Library and LRC Fundamentals	80	5
2411 Typewriting I	40	3
2412 Library Forms and Records	40	3
2413 AV Equipment Operation, Use and Maintenance	80	5
2420 Technical Services	80	5
2421 AV Materials Production	80	5
2422 Typewriting II	40	3
2423 Library Office Practices	40	3
2430 Library Public Services	80	5
2431 Library Operations and Practices	40	3
2432 Field Project and/or Case Study Related Elective	80 40	5 3
Total Contact Hours:	720	
Total Credits:	48	

COURSE DESCRIPTIONS

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the library resources field.

COURSE DESCRIPTIONS

	Hours	Credits
2410 Library and LRC Fundamentals	80	5

This course is an introduction to all major phases of library and learning resource center operations, especially as they pertain to the role of "Library Aide." Units include library history, governmental and legislative relationships, financial structure and systems, technical and public services, library systems, organizational patterns, physical plants, public relations and media systems.

2411 Typewriting I	40	3
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A course for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application; including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development. Emphasis is begun on typing catalog copy.

2412 Library Forms and Records	40	3
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The student receives an introduction to standard forms and record keeping to include office machines, correspondence and filing as they apply to library functions. Catalog indexes and classification are introduced.

2413 AV Equipment Operation, Use and Maintenance	80	5
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The student will operate a variety of AV equipment and cover basic maintenance procedures for the various hardware items.

2420 Technical Services	80	5
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The student receives an introduction to techniques of ordering and writing acquisitions, cataloging, filing, shelving, designing and the use of card catalogs, materials handling, mending, automation, serials control, government documents and other "non-book" materials. Prerequisite: 2412.

2421 AV Materials Production	80	5
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The student produces a variety of AV software and prepares catalog cards for produced and commercial media.

2422 Typewriting II	40	3
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A continuation of Typewriting I with the higher development of vocational competency, includes typing of: business letters, forms manuscripts and tabulations. Speed and accuracy are stressed with emphasis on production typing problems and speed building. Increased emphasis is stressed on accurate catalog copy.

2423 Library Office Procedures	40	3
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This course emphasizes skills, techniques and attitudes Librarians and LRC Directors desire in their administrative officer. Correspondence, file organization, telephoning, personal hygiene and dress are covered. Laboratory or simulation is used to provide direct experience with possible tasks.

2430 Library Public Services	80	5
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This course is an introduction to public services in library operations. Unit includes a study of services peculiar to different types of libraries (e.g. SDI systems for special libraries), hardware applications, circulation operations, information services, reference services, arrangement of materials, inter-library loan systems, personnel requirements and human relations.

COURSE DESCRIPTIONS	Hours	Credits
2431 Library Operations and Practices	40	3
The student is exposed to service demands of patrons and the operation that provides the service. This will include shelf arrangement, basic reference, etc., and the procedures to satisfy the demand quickly. Actual experience in a LRC environment will be provided.		

COURSE DESCRIPTIONS	Hours	Credits
2432 Field Project and/or Case Study	80	5
The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.		

Printing is the major means of communication in this information directed society, and is a major industry. The demand is high for trained printers throughout the country.

The complexity and high mechanization of printing equipment today makes training in modern methods and techniques extremely important. A modern printing laboratory includes offset presses, letterpress, varityper, folders, headliner, stripping tables, platemaking equipment, paper drills, power paper cutter, horizontal camera, and darkroom equipment.

The printing industry provides employment for a great number of people in a wide variety of specialties. Printing craftsmen usually specialize in one area of the printing operation such as type composition, photography, platemaking, presswork, or binding.

Opportunities for employment are found in printing and publishing plants, government agencies, manufacturers of paper products, and in many large corporations, banks, insurance companies, colleges, and travel organizations which have their own print shops.

PRINTING TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
2210 Typography and Typesetting	48	4
2211 Layout and Camera	48	4
2212 Stripping and Platemaking	48	4
2213 Printing I	96	6
2220 Typesetting and Composition	36	3
2221 Line and Halftone Negative	36	3
2222 Proofing, Stripping and Platemaking	36	3
2223 Printing II	96	6
2224 Printing Estimating	36	3
2230 Advanced Typography and Typesetting	36	3
2231 Line and Halftone — Color	36	3
2232 Proofing and Platemaking — Color	36	3
2233 Production Printing I	96	6
2234 Typewriting	36	3
2240 Negative and Plate Makeready	36	3
2241 Production Printing II	96	6
2242 Press Troubleshooting	36	3
2243 Estimating and Business Practices	36	3

PRINTING TECHNOLOGY

	Hours	Credits
2244 Bindery Practices	24	2
2251 Special Problems in Printing	120	8
2252 Manufacturing, Organization and Management	36	3
2253 Supervisory Techniques I	36	3
2254 Communications Skills Elective (Electronics or Accounting)	36	3
2261 Field Case and Project Study	120	8
2262 Production Controls	48	4
2263 Supervisory Techniques II	36	3
2264 Labor Management	36	3
2265 Human Relations	36	3

Total Contact Hours: 1,488
Total Credits: 112

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward printing technology.

2210 Typography and Typesetting 48 4

Type, what it is, sizes, different methods, spacing, and line count are taught and laboratory experiences in lettering type faces for layout are provided. Spacing and selection of type are begun.

2211 Layout and Camera 48 4

This course provides instruction in the operation of process cameras. Line photography techniques are emphasized. Film developing and darkroom techniques and procedures are practiced. Preparation of mechanical art for camera copy is also covered.

2212 Stripping and Platemaking 48 4

This course covers laying-out and stripping the flat for black and white reproduction. Instruction and experience are provided in using equipment and supplies in stripping in negatives. Accuracy and placement of negatives in goldenrod sheets are stressed. Finished products are used in completion of letterpress and offset platemaking.

2213 Printing I 96 6

The student is introduced to common small press duplicators. Work experience is provided for single sheet, black and white copy. Emphasis is placed on layout to finished product skills.

2220 Typesetting and Composition 36 3

This laboratory course includes experience, instruction and practice for reproduction with varityper, headliner, hand-set type, transfer lettering, and phototype.

COURSE DESCRIPTIONS	Hours	Credits
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2221 Line and Half-tone Negative	36	3
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This course requires experience in line negative work. Students learn methods and techniques of shooting copy which contain a graduation of tone, understanding densitometry types of screens and films in producing half-tone negatives.

2222 Proofing, Stripping and Platemaking	36	3
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Accuracy is stressed as registration and stripping of multiple negative occurs. Double or triple-burn platemaking gives the student experience in multiple imagery.

2223 Printing II	96	6
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The student begins his experience with production offset presses, with letterpress and automated duplicators. Each student selects a job experience that demonstrates techniques to complete a finished product.

2224 Printing Estimating	36	3
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The course consists primarily of estimating each individual task of a printing job and putting it all together to come up with the entire cost of the job. The curriculum also consists of requests for estimates for jobs and of estimate sheets for the customers. Such items as paper cost, typesetting costs, press costs and bindery costs are part of the course.

2230 Advanced Typography and Typesetting	36	3
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This course requires a student to prepare a complete layout, including balance, design, appropriate type style, use of color and to prepare for the color separation camera work.

2231 Line and Half-tone — Color	36	3
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The student is prepared to make multiple plates with exact register for proportion for multi-color plates. The use of special effects, screens and rubylith are experienced. Prerequisites: 2211, 2221

2232 Proofing and Platemaking — Color	36	3
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Deep etch and multimetal plates are used in preparing for color production. Proofing is given special emphasis to insure accuracy. Prerequisites: 2211, 2222

2233 Production Printing I	96	6
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Press makeready and cleaning between color runs are emphasized. The student begins to operate the press as he would in a job assignment.

2234 Typewriting	36	3
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Individual placement in typing will advance the student in touch typewriting and its application, forms, letters, manuscripts and tabulation are included with more advanced students receiving special development.

2240 Negative and Plate Makeready	36	3
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Accuracy and logical sequences are emphasized to provide experience in preparing job orders.

2241 Production Printing II	96	6
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The student experiences full production runs using the larger presses of the printing laboratory.

2242 Press Troubleshooting	36	3
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This course covers techniques of spotting malfunctionings and quickly correcting them to insure continued press runs.

COURSE DESCRIPTIONS	Hours	Credits
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2243 Estimating and Business Practices	36	3
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This is a continuation of 2224 with emphasis on cost accounting procedures and the use of Franklin Catalogs for pricing letterpress and offset jobs; for preparation and use of markup summaries, and for using estimator's worksheet and quotation forms. They are also introduced to volume buying of paper and stock control.

2244 Bindery Practices	24	2
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This course is concerned with the handling of the finished printed product. Operations covered are inspection, collating, inserting, trimming, padding, stitching, folding and punching. Instruction is also given in the operation of the equipment involved.

2251 Special Problems in Printing	120	8
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The student is assigned a number of activities and given a number of responsibilities unique to the printing field. These range from supervision and directing groups of workers under instructors' direction to surveys of research projects in areas of student deficiencies.

2252 Manufacturing, Organization and Management	36	3
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An in-depth study oriented to the first-line supervisor and other management personnel who are interested in the interrelationships of the various departmental functions and the overall management problems encountered in a manufacturing organization. It includes the establishment of lines of authority, duties and responsibility, and rules for charting an organizational structure. Also reviewed are manufacturing engineering and research, industrial engineering, materials management, process and product control, facilities planning, plant engineering and manufacturing information systems.

2253 Supervisory Techniques I	36	3
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This course covers management development. The material is directed toward the responsibilities of any supervisor; including responsibilities of the supervisor functioning within an organizational structure. It relates to communications, motivation, delegation of authority, interviews, orienting and inducing new employees, and evaluation of employee performance.

2254 Communications Skills	36	3
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The student covers written and oral communications. Preparation and presentation skills are stressed.

2261 Field Case and Project Study	120	8
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Work experience in the laboratory or outside is arranged when the student operates on a variety of production job assignments.

2262 Production Controls	48	4
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This course is geared primarily toward developing in the student the ability to oversee a number of operations at one time in a typical print shop. In addition, the students will become acquainted with inventory controls, ordering of equipment and vendors catalogs.

2263 Supervisory Techniques II	36	3
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This course is designed to develop the necessary skills needed for effective management of people. The various topics will be developed through group discussion, case studies and in-basket situations.

COURSE DESCRIPTIONS

Hours Credits

2264 Labor Management

30 3

Students explore the development and application of the labor laws and practices that form the basis of modern day industrial relations. Among the topics considered are the history and development of organized labor, Federal labor legislation, labor-management laws, civil rights, state laws and regulations, local regulations, Federal mediation and conciliation service, the organizing drive, the strike, collective bargaining, anatomy of a

COURSE DESCRIPTIONS

Hours Credits

labor agreement, handling in-shop grievances and arbitration.

2265 Human Relations

36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

CHILD CARE TECHNOLOGY

Child care specialists are needed to serve as assistant teachers or to take charge of small groups under the supervision of a master teacher in day care centers, nursery schools, kindergartens, day nurseries, and programs to culturally disadvantaged young children. Students study all phases of early childhood development, handling groups of young children and parent-child interrelationships. Through observation and practice, the student develops techniques in such activities as music, art, storytelling and language development. During field experiences, the student progresses from observation to supervised student/assistant teaching and observes and becomes part of parent groups. Staff and teaching opportunities may be available in private cooperative nursery schools, day care centers, neighborhood centers, or as counselors in childrens' homes and institutions for exceptional children.

Students completing 49 prescribed credits in courses 2610 through 2633 of this program may receive a technical certificate as a Child Care Specialist I (CCSI). At the completion of the program students are awarded an Associate Degree in Applied Science in Child Care Technology as Child Care Specialist II (CCSII).

CHILD CARE TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communication skills through individually prescribed units from the skills advanced studies.

In addition, the college offers short preparatory programs in Health Occupations which may provide helpful for students wishing to enroll in this program.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
2610 Child Growth and Development	48	4
2611 Group Care of Children I	84	6
2612 First Aid and Safety	36	3
2613 Orientation to Child Care Service	36	3
2620 Nutrition Care I	36	3
2621 Group Care of Children II	168	8
2622 Team Relationships	36	3
2623 Social Concepts of Child Care	36	3
2630 Recreational and Creative Activities for Children I	36	3
2631 Group Care of Children III	168	8
2632 Personal Development	24	2
2633 Nutrition Care II	36	3
2640 Child Development I	60	5
2641 Recreational and Creative Activities for Children II	36	3

	Hours	Credits
2642 Menu Planning for Preschool Children	36	3
2643 Preschool Art	48	3
2644 Accounting I	48	4
2650 Child Development II	60	5
2651 Language Arts for Children	36	3
2652 Observing and Recording Child Behavior	36	3
2653 Business Principles and Organization	36	3
2660 Preschool Music	36	3
2661 Management Techniques	48	4
2662 Practicum in Child Care	168	5
2663 Audio-Visual Materials and Methods	60	3
Total Contact Hours: 1,452		
Total Credits: 96		

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills and mathematics skills, with supplementary material oriented toward Health Occupations.

2610 Child Growth and Development 48 4

Introductory study of the physical, social, emotional and mental development of the young (preschool) child. The influence of cultural environment on development and individual differences in development are considered.

2611 Group Care of Children I 84 6

This course covers the role, duties and responsibilities of the child care center staff, the primary objectives, goals and responsibilities of a center; also, basic value structure, setting, organization and programming of child care facilities.

2612 First Aid and Safety 36 3

Basic and advanced ARC first aid are covered as well as regulations and laws for child care.

2613 Orientation to Child Care Service 36 3

An introductory course, intended to acquaint the student with the basic principles involved in teaching the younger child. The course will include working with parents and the role of the kindergarten and day care center.

2620 Nutrition Care I 36 3

A course emphasizing normal nutrition and the relation between good nutrition and general well-being. Objective of the course is to impress the student with necessity of relating knowledge gained to early childhood nutrition responsibilities.

2621 Group Care of Children II 168 8

A continuation of Group Care of Children I (2611) with emphasis on the basic principles involved in guiding the preschool

COURSE DESCRIPTIONS	Hours	Credits
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child in the areas of art, music, science, mathematics, language development, and social and emotional development. 96 hours of observation of children in group care is provided.

2622 Team Relationships	36	3
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Study of the professional organizations, child care laws, licensure requirements and ethical and legal responsibilities of the child care team. Educational resources and in-service programs are presented and related to the child care team.

2623 Social Concepts of Child Care	36	3
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Course designed to help the student gain an understanding of the importance of good working relationships with adults, including parents, community leaders and members and employers; in addition to establishing connections for effective use of community resources. Prerequisite: 2613

2630 Recreational and Creative Activities for Children I	36	3
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This course covers recreational and creative activities as relates to influencing desired change in behavior in children, including analysis of play situations appropriate to the needs and abilities of three to five year old children. Instruction and practice in teaching and supervising games for the young child are included.

2631 Group Care of Children III	168	8
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A continuation of Group Care of Children II (2621).

2632 Personal Development	24	2
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This course enables students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming, wardrobe, personality and communication skills so they possess the personal qualities considered necessary for employment in their chosen field.

2633 Nutrition Care II	36	3
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A study of the specific nutritional needs of children and the effects of food on their growth and development. Emphasis will be placed on the establishment of good food habits and the methods of approaching this according to age. Menu planning for the child will also be included.

2640 Child Development I	60	5
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Course designed to further the student's understanding of the physical, social, emotional, and mental development of the school age child up to preadolescence. Child guidance and behavior problems are considered. Feelings, attitudes, and values are discussed.

2641 Recreational and Creative Activities II	36	3
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A continuation of Recreational and Creative Activities I (2630). Laboratory experiences include teaching and supervising group games in child care center setting.

2644 Accounting I	48	4
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An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises. Included are practical applications of the principles learned.

COURSE DESCRIPTIONS	Hours	Credits
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2642 Menu Planning for Preschool Children	36	3
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A course designed with emphasis on planning and serving proper meals and snacks for preschool children. Covered also are instructions in planning meals for children requiring special diets and methods and techniques for providing group food service.

2643 Preschool Art	48	3
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This course covers art materials and methods and techniques for providing art experiences for young children. Basic art skills are developed from the vantage point of the child care staff member.

2650 Child Development II	60	5
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A continuation of Child Development I (2640) with emphasis placed on study of behavioral patterns and adjustment problems of the preschool child. Laboratory experiences such as direct observation of children in various settings and working with children in groups will be provided to supplement the class work.

2651 Language Arts for Children	36	3
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This course covers methods and techniques of encouraging development of language skills in preschool age children.

2652 Observing and Recording Child Behavior	36	3
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Course designed to increase objectivity and proficiency in observing and interpreting children's behavior; in addition, to increase awareness of normative patterns of behavior. Lecture and observation facilities are provided for study of young children.

2653 Business Principles and Organization	36	3
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This course includes an introductory study and analysis of our business system as a whole in relation to our economic society. It includes an introduction to business ownership, organization, principles, problems, management, control, facilities, administration, and practices to develop an understanding of American business enterprises and their functions.

2663 Audio-Visual Materials and Methods	60	3
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An introductory course in audio-visual materials, methods and techniques for use in group programs. Instruction is provided on the preparation and use of audio-visual materials and equipment.

2660 Preschool Music	36	3
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Intended for students who plan to work with preschool children. The course deals with basic skills needed to involve children in simple music activities. Simple instruments such as auto-harp and rhythm instruments will be used. Singing, records, and other materials for group activities will be presented. Participation in musical activities with the children in the laboratory will be part of the program.

2661 Management Techniques	48	4
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Principles of child care agency management. Theories and scope of the manager in relation to the personnel, business office, housekeeping, and maintenance requirements of the agency.

2662 Practicum in Child Care	168	5
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Supervised experience in child care agencies designed to enrich the student through observation and participation in current practices.

CLINICAL LABORATORY TECHNOLOGY

The Clinical Laboratory Technology program provides qualified men and women with an opportunity to prepare as safe and reliable functioning members of the laboratory team; specifically to perform routine laboratory tests under supervision.

The program is designed to assure students a strong foundation for the skills unique to the supportive role in the Medical Laboratory. The curriculum is oriented around courses in Medical Laboratory techniques, but includes the academic disciplines related to the major field of study.

Standards for the laboratory assistant program have been established by the Committee on Certified Laboratory Assistants, approved by the Council on Medical Education of the American Medical Association. Students who satisfactorily complete the prescribed studies are eligible in the first year and are expected to take the certified laboratory assistants' national examination. A satisfactory score on this examination entitles the graduate to use the title "Certified Laboratory Assistant" (CLA) after his or her name.

The second year of the curriculum offers advanced clinical techniques and related education. The seven-quarter program leads to the degree of Associate in Applied Sciences.

CLINICAL LABORATORY TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
2810 Anatomy and Physiology	48	4
2811 Fundamentals of Laboratory Techniques	120	6
2812 Medical Ethics and Personal Health	24	2
2813 Clinical Blood Bank Techniques	84	3
2814 Clinical Routine Analysis Techniques	84	3
2815 Clinical Practicum (Optional)	96	1
2820 Clinical Hematology Techniques	168	6
2821 Clinical Blood Bank Applications	84	3
2822 Clinical Routine Analysis Applications	84	3

	Hours	Credits
2823 Clinical Bacteriology and Parasitology Techniques	120	4
2830 Clinical Chemistry Techniques	168	6
2831 Clinical Hematology Applications	240	8
2832 Clinical Serology Techniques	72	2
2840 Clinical Chemistry Applications	240	8
2841 Clinical Bacteriology and Parasitology Applications	160	6
2842 Clinical Serology Applications	80	2
2850 Technical Algebra	60	5
2851 Chemistry for Medical Laboratory Technicians	36	3
2852 Laboratory Methods for Medical Laboratory Technicians I	144	6
2853 Human Relations	36	3
2860 Principles of Biochemistry	36	3
2861 Laboratory Methods for Medical Laboratory Technicians II	144	6
2862 Physiology	36	3
2863 Instrumentation	60	4
2870 General Pathology	36	3
2871 Statistics	48	4
2872 Introduction to Data Processing and Programming	84	5
2873 Examination Review	60	5

Total Contact Hours: 2,652
Total Credits: 117

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills, mathematics skills, and science, with supplementary material oriented toward Health Occupations.

2810 Anatomy and Physiology 48 4

The normal human body as a structural and functional unit. Homeostatic mechanisms will form a major portion of the course with emphasis on the physiology of the body.

2811 Fundamentals of Laboratory Techniques 120 6

Elementary and basic skills encountered in the clinical laboratory. Identification of the role of the laboratory assistant in the clinical laboratory.

2812 Medical Ethics and Personal Health 24 2

This course presents the ethics of medicine, professional conduct and personal habits that are expected of allied health workers.

2813 Clinical Blood Bank Techniques 84 3

Principles and practice of laboratory techniques in blood bank.

COURSE DESCRIPTIONS	Hours	Credits
2S14 Clinical Routine Analysis Techniques	84	3
Principles and practice of clinical laboratory techniques in the routine analysis of body fluids.		
2S15 Clinical Practicum	96	1
This course is designed to provide the student with practice time in a clinical area of choice either to reinforce or expand abilities.		
2S20 Clinical Hematology Techniques	168	6
Principles and practice of laboratory techniques in hematology.		
2S21 Clinical Blood Bank Applications	84	3
Studies of the principles and performance of the routine procedures in the Clinical Laboratory Blood Bank, consisting of detection of various blood group system antigens and antibodies. Inclusive shall be immunologic theories; compatibility testing theories; hemolytic disease of the newborn, procedures and principles; donor screening, phlebotomy and processing; and recommendation of the American Association of Blood Banks. Co-requisite or Prerequisite: 2S13		
2S22 Clinical Routine Analysis Applications	84	3
Study of the clinical applications of routine analysis in the hospital laboratory.		
2S23 Clinical Bacteriology and Parasitology Techniques	120	4
Principles and practice of laboratory techniques in bacteriology and parasitology.		
2S30 Clinical Chemistry Techniques	168	6
Principles and practice of laboratory techniques of clinical chemistry.		
2S31 Clinical Hematology Applications	240	8
Study and practice of the clinical applications of hematology in the hospital laboratory. Prerequisite: 2S20		
2S32 Clinical Serology Techniques	72	2
Principles and practice of laboratory techniques of serology.		
2S40 Clinical Chemistry Applications	240	8
Practice of clinical applications of chemical analysis in the clinical laboratory. Co-requisite or Prerequisite: 2S30		
2S41 Clinical Bacteriology and Parasitology Applications	160	6
Study and practice of the clinical applications of bacteriology and parasitology in the hospital laboratory. Co-requisite or Prerequisite: 2S23		
2S42 Clinical Serology Applications	80	2
Study and practice in the clinical application of serology in the hospital laboratory. Co-requisite or Prerequisite: 2S32		
2S50 Technical Algebra	60	5
Basic algebra including the operations with signed numbers, variables, first degree equations, special products, factoring, algebraic fractions and systems of linear equations. Slide rule techniques are emphasized related to the clinical laboratory.		
2S51 Chemistry for Medical Laboratory Technicians	36	3
Principles and theory of general chemistry including solutions, acids and bases, chemical kinetics and equilibriums. Organic chemistry and bio-chemistry principles are introduced.		

COURSE DESCRIPTIONS	Hours	Credits
2S52 Laboratory Methods for Medical Laboratory Technicians I	144	6
The principles and practices of advanced laboratory techniques in hematology, serology, immunohematology and routine analysis. Prerequisites: 2S21, 2S31 and 2S42		
2S53 Human Relations	36	3
In this course the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.		
2S60 Principles of Biochemistry	36	3
A study of structures in relationship to biological functions of cellular constituents; carbohydrates, proteins, lipids, nucleic acids and enzymes, metabolic processes and control in the human body is made in this course. Prerequisite: 2S51		
2S61 Laboratory Methods for Medical Laboratory Technicians II	144	6
The principles and practices of clinical bacteriology and chemistry including micro-biological chemical reactions, selective and differential media, clinical enzymes, biochemistry and blood gasses.		
2S62 Physiology	36	3
A study of the function of the various systems of the human body in health.		
2S63 Instrumentation	60	4
Instrumentation theory and practice as applied to electronic equipment and automated systems in the medical laboratory. Prerequisite: 2S50		
2S70 General Pathology	36	3
A study of the body in disease utilizing case studies, laboratory data and autopsy findings. Prerequisite: 2S10		
2S71 Statistics	48	4
Descriptive statistics (collection and presentation of data, frequency distributions, measures of central tendency, dispersion and skewness), index numbers, simple correlation and regression, curve fitting and introduction to statistical inference, sampling and probability are studied. Prerequisite: 2S50		
2S72 Introduction to Data Processing and Programming	84	5
This course is designed to give a general introduction to data processing and programming with emphasis on electronic data processing. Topics include the development of data processing from manual methods through electromechanical to electronic, role of data processing in an organization, data processing applications, computer hardware, internal data representation, stored program concepts, programming systems, introduction to programming, operations research and data processing as a profession.		
2S73 Examination Review	60	5
In-depth view of major premises and theory in Clinical Laboratory Technology. Clinical test procedures and their alternatives as well as problem solving techniques are stressed.		

Millions of Americans "eat out" every day, and the demand for people trained in culinary arts is many times greater than the supply.

Eating places vary from roadside diners to plush restaurants with exotic atmospheres. Most are independent businesses with fewer than ten employees.

A manager is responsible for the entire operation of an establishment. He coordinates and directs the work of chefs, cooks, waiters, waitresses, kitchen helpers and other employees to insure that the food is prepared properly and served promptly. He also makes sure the health and sanitation regulations are observed.

Supervisor positions can be found in dining rooms and cafeterias in schools, colleges, hotels, department stores, factories, hospitals, nursing homes, private clubs and in public restaurants.

CULINARY ARTS CAREERS

Associate Degree

PROGRAM COMPOSITION

	Hours	Credits
3410 Occupational Orientation	36	2
3411 Mathematics of Finance	60	5
3412 Introduction to Volume Food Preparation	108	5
3413 Introduction to Hotel-Motel Management	36	3
3414 Introduction to Volume Food Service	36	2
3420 Introduction to Technical Communications	36	2
3421 Nutrition	24	2
3422 Volume Food Preparation	108	5
3423 Human Relations	36	3
3424 Volume Food Service	36	2
3430 Psychology	36	3
3431 Oral Communications	24	2
3432 Food and Beverage Management and Services	36	3
3433 Food Production Principles	24	2
3434 Institutional Foods Preparation	108	5
3435 Institutional Foods Service	36	2
3440 Business Communications	36	3
3441 Food and Beverage Purchasing and Services	36	3
3442 Motel-Motor Hotel Management	24	2
3443 Gourmet Food Preparation	132	6
3444 Gourmet Food Service	36	2
3450 Economics	36	3
3451 Techniques of Supervision	36	3
3452 Gourmet Specialties Preparation	132	6
3453 Accounting	48	4
3454 Gourmet Specialties Service	36	2
3460 Field Project and/or Case Study	48	4
3461 Seminar in Occupations	36	2
3462 Gourmet Buffet Preparation	132	6
3463 Business Law	36	3
3464 Gourmet Buffet Service	36	2

Total Contact Hours: 1,620
Total Credits: 99

CULINARY ARTS CAREERS

COURSE DESCRIPTIONS

Hours Credits

3410 Occupational Orientation 36 2

Career pursuits are investigated in the general area of study of the student's interests and enrollment and include interviews, study of occupational information and its sources, testing, exploration of job opportunities and research of specific jobs and fields. Enrollment in the course is recommended in the first quarter the student enters the College.

3411 Mathematics of Finance 60 5

This course stresses the fundamental operations and their application to business problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, insurance, annuities, graphs and statistic.

3412 Introduction to Volume Food Preparation 108 5

Fundamentals of cooking learned through lectures and lab work cooking. Fundamentals are covered that apply to all cooking and are requisite to progress in the cooking field. The student is given the how and why of all training to include personal hygiene, sanitation and safety. Basic menu writing and balancing meals as well as the knowledge needed for progressive steps in preparing completed meals.

3413 Introduction to Hotel-Motel Management 36 3

This course traces the growth and development of the lodging industry from early inns to modern skyscraper hotels and highway motels; the organization of hotel operations; opportunities and future trends.

3414 Introduction to Volume Food Service 36 2

This course stresses the steps taken in getting the completed meal to the customer in the fastest and best manner while retaining quality, using various types of table setups. The types of service covered are American, French, Russian, and others. Waiter training is important and emphasized. Busing, cleaning and resetting of dining room, kitchen cleanup, dishwashing and sanitation are all stressed. Proper storage of all portable equipment is a continuing daily practice throughout the program.

3420 Introduction to Technical Communications 36 2

After individual testing to determine specific language needs, this course provides for extensive training in general writing, listening, reading and speaking. Emphasis is placed on the use of logic in the development of written and oral ideas.

3421 Nutrition 24 2

This is an introductory course in nutrition which covers determination of individual requirements for energy protein, minerals, and vitamins; foods as a source of daily requirements, and the relationship of food and nutrition to optimal physical fitness.

3422 Volume Food Preparation 108 5

Introduction into methods of preparing foods in volume for large feeding operations, equations for raising or lowering recipes, mathematics used to determine per portion costs so as to determine a profitable selling price are covered. Preparation of volume foods, methods of retaining top quality in prepared

COURSE DESCRIPTIONS**Hours Credits**

foods until dispersement, timing of activities to have products ready just prior to service and the limitation of menu items in this type of food service.

3423 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

3424 Volume Food Service 36 2

Methods used to dispense volume foods: cafeteria table service, wagon service, in-plant feeding, sanitation and cleanup procedures necessitated by volume feeding.

3430 Psychology 36 3

This course presents a study of psychological behavior and research within employer-employee relationships. Information concerning human needs and behavior in business and industry is designed to improve individual attitudes, productivity and personal morale in working situations.

3431 Oral Communications 24 2

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

3432 Food and Beverage Management and Services 36 3

Covers the entire food and beverage operations from purchasing, receiving and storage to preparation and service.

3433 Food Production Principles 24 2

This course is designed to teach those with management responsibilities how to produce quality foods in quantity.

3434 Institutional Foods Preparation 108 5

For institutions such as colleges, universities, hospitals, factories, nursing homes and other institutions feeding on large scale with multiple choice menus. This course covers figuring total food preparation predicted on highest possible number of customers and reducing this by percentage figures from same time previous month and previous year; percentage of popularity of each menu item from the same records and the effect of weather upon sales. Marketing for good sales potential of available food and meals based on popularity of the items. Multiple entrees meals are prepared based on the above methods.

3435 Institutional Foods Service 36 2

Cafeteria and dining room service, cart service, prepared tray service and portable hot cart service. Cleanup and sanitation entailed in all of the above methods.

3440 Business Communications 36 3

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

3441 Food Beverage Purchasing and Services 36 3

A detailed study of the major groups of food purchased by quantity buyers, including fresh fruits and vegetables, processed fruits and vegetables, dairy products, cereals and cereal products, beverages, poultry and eggs, fish and shell fish, meats and alcoholic beverages.

3442 Motel-Motor Hotel Management 24 2

A unit of study designed for operators of smaller properties, which is designed to provide a thorough understanding of many administrative techniques required to manage today's motel.

COURSE DESCRIPTIONS**Hours Credits**

Topics covered include the history and nature of motel business, financial considerations, space utilization, sales promotion, guest relations, guest room facilities, food and beverage facilities, accounting records, interpreting financial statements and administrative control.

3443 Gourmet Food Preparation 132 6

Student makes the transition from the volume type food preparation to the gourmet foods, where the highest quality of food is prepared and each dish is a challenge for the student to meet. Smaller or individual dish preparation is the mode and each student takes his turn in leading the operation in gourmet preparation. Marketing, menu writing, recipe research and methods are done by the class as well as preparation and the potentials of showmanship are used.

3444 Gourmet Food Service 36 2

The white linen formal dining individual presentation by the waiters, eating and the critique are stressed. Standard cleanup procedures are covered.

3450 Economics 36 3

Economics includes an analysis of national income accounts, the operation of the monetary and banking system and a survey of international economic problems.

3451 Techniques of Supervision 36 3

This course covers management development. The material is directed toward the responsibilities of any supervisor; including responsibilities of the supervisor functioning within an organizational structure. It relates to communications, motivation, delegation of authority, interviews, orienting and inducting new employees and evaluation of employee performance.

3452 Gourmet Specialties Preparation 132 6

Continuation of gourmet cooking with special attention to fanciwork on hors d'oeuvres, cake decoration, garnishes, outstanding salads and dressings, unusual vegetables and exquisite sauce and high quality bakery products. Special attention is given to every phase of the gourmet meal to include napkin folding, decorative butter, vegetable flowers, relishes, etc.

3453 Accounting 48 4

An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting; collecting, summarizing, analyzing and reporting information about service and mercantile enterprises. Included are practical applications of the principles learned.

3454 Gourmet Specialties Service 36 2

This course includes hors d'oeuvres service, main course service, and a waiter service for each small table, and provides for show presentation of each course of the meal including flaming or fancy desserts. Standard cleanup procedures.

3460 Field Project and/or Case Study 48 4

The student will be given a special project or case study specifically related to the occupational area. The course should be a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis.

3461 Seminar in Occupations 36 2

In this course which is designed to equip the student for a smooth transfer from training to the world of work, resource persons representing industrial and business organizations discuss locating jobs, job applications and interviews, preparation of credentials, human relations, employer-employee expectations, personal grooming and appearance, labor laws, union

COURSE DESCRIPTIONS**Hours Credits**

membership, taxes, insurance, liability, trade and professional associations and organizations, occupational journals, further training and job upgrading.

3462 Gourmet Buffet Preparation**132 6**

This course covers buffet as a showcase of talents, including menu writing, centerpiece design and preparation utilizing such items as decorated food, carved ice or carved styrofoam, buffet layout according to exact specifics, the number and type of dishes, available refills, hot and cold, and devised methods of keeping the table neat at all times are emphasized. Research is done in the books of the buffet masters as to best dishes, best methods of preparation, best display and eating quality.

3463 Business Law**36 3**

This course includes the study of the nature and sources of business law, a description of the Judicial System and the

COURSE DESCRIPTIONS**Hours Credits**

nature of Torts and Crimes for which the law provides punishment. Emphasis is placed on legal situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

3464 Gourmet Buffet Service**36 2**

Buffet setting supervisory assignment of tasks to be performed such as the number of cook attendants behind the buffet line to care and/or serve, assignment of runners to keep buffet filled and cooks in kitchen to keep food coming are covered. Other content covered: responsibility of the host, traffic flow patterns, greeting and seating of guests, as needed to include supervision of cleaning tables and the serving of dessert and beverage, determination of salvageable foods and the storage of remaining food and supervisory responsibilities related to cleanup and sanitation.

DENTAL ASSISTANT

Students in the Dental Assistant program will become familiar with all of the equipment and supplies found in a typical dental office. In addition to classroom lectures and demonstrations, the students will provide chairside assistance to dentists by learning to manipulate dental materials used in restoring teeth and the making of impressions and models. They will learn the methods of sharpening and sterilizing instruments and the processing of dental X-ray film. The curriculum includes instruction in dental anatomy and physiology, bacteriology, pharmacology, oral pathology, dental materials, chairside assisting, typing, English, human relations and record keeping. A large portion of the student's time is spent in laboratory work and clinical experiences.

DENTAL ASSISTANT Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, typing and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
3001 Introduction to the Dental Practice	24	2
3002 Preclinical Practice I	60	3
3003 Dental Materials and Lab I	72	4
3004 Dental Anatomy	48	4
3005 Integrated Basic Science I	48	4
3006 Oral Microbiology/Pathology	60	3
3021 Business Communications	36	3
3023 Personal and Community Health	24	2
3026 Preclinical Practice II	60	3
3027 Dental Materials and Lab II	72	2
3028 Integrated Basic Science II	48	4
3029 Preventive Dentistry/Diet	48	2
3031 Personal Development	24	2
3033 Human Relations	36	3
3035 Dental Radiography	60	3
3036 Dental Office Management	48	3
3037 Preparation for Clinical Practice	48	2
3040 First Aid and Pharmacology	36	3
3041 Clinical Practice	264	7
3042 Ethics/Jurisprudence	24	2

Total Contact Hours: 1,140
Total Credits: 61

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills, mathematics skills, and typing, with supplementary material oriented toward Health Occupations.

3001 Introduction to the Dental Practice 24 2

This course presents the objective, qualifications, responsibilities, and scope of service of the dental assistant in practice. The history of dentistry, areas of dentistry, dental assisting, and the dental health "team" concept and their functions in dentistry are presented. The various types of dental patients encountered in the dental office is covered. Dental terminology relevant to this subject is stressed.

3002 Preclinical Practice I 60 3

This course introduces the student to the dental operator and the responsibilities of the dental assistant in the dental operator: Housekeeping duties, assisting the doctor, patient care, ethic techniques, sterilization procedures, and effective teamwork. Operative dentistry is presented following dental specialty, oral surgery, and hospital oral surgery. Field trips will be conducted in specialty offices for student observation. Terminology relevant to this subject is stressed.

3003 Dental Materials and Lab I 72 4

This course presents the theory, identification, physical and chemical properties, manipulation, application, and storage of the various dental materials relative to restoring mouths with teeth present. Specification standards of the American Dental Association are stressed. The identification and selection of the necessary armamentarium, and the proper use, maintenance and safety precautions of laboratory equipment is presented. The student in laboratory sessions will construct and carry out those laboratory procedures pertinent to this course. Terminology relevant to this course is stressed.

3004 Dental Anatomy 48 4

A course designed to acquaint the student with the areas of oral anatomy, head and neck anatomy, basic embryology, histology, and tooth morphology as it applies to the dental field. The emphasis is on the dental assistant's need to understand this material as she assists the dentist. Terminology relevant to this course is also included so that the student may communicate effectively in the profession. Drawing and carving of teeth by the student are incorporated in this subject to develop dexterity in using their hands and fingers.

3005 Integrated Basic Science I 48 4

The study of the human body as an integrated unit, including anatomy, physiology, medical terminology, and application of physics, chemistry and microbiology. Subjects covered are the cell, tissues, membranes, glands, disease and pathogenic organisms, skin and tumors, skeletal system, muscular system and circulatory system.

COURSE DESCRIPTIONS

Hours Credits

3006 Oral Microbiology/Pathology 60 3

The introduction of this course starts with the basic concepts of microbiology being presented with emphasis placed on the oral microflora. As the course progresses, the pathogenic problems of the oral cavity with emphasis on the signs, symptoms, and prognosis of the disease processes are presented. Laboratory experiments are conducted allowing observation of organisms.

3021 Business Communications 36 3

The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, speeches, memos, and summaries of conferences, which are to be typed. Emphasis is on business writing which is informative, concise, and persuasive, while using correct business grammar. Principles are stressed in correctness, clarity, conciseness, courtesy, completeness, consideration and concreteness.

3023 Personal and Community Health 24 2

Common community health concerns are explored such as: preventing and controlling communicable disease, diseases of general ages, depressants and stimulants, community health programs, oral health care of the dental assistant, and disease occurring in the mouth. The emphasis of the course is upon healthful living practices and problem solving techniques.

3026 Preclinical Practices II 60 3

This course is continuation of Preclinical Practice I (3002). Four handed dentistry concepts for maximum utilization are presented. The following four dental specialties are presented: prosthodontics, orthodontics, endodontics, pedodontics and preventive dentistry, and periodontics. Field trips will be conducted in specialty offices for student observation. The student will be introduced to various dental procedures performed on live patients by a dentist in the dental assistant's laboratory. Also the student will acquire knowledge in diagnostic aids procured from the patient in the dental office.

3027 Dental Materials and Lab II 72 2

This course presents the various dental materials relative to prosthetics: fixed and removable appliances. The student will be introduced to the handling and care of laboratory cases. The student in laboratory sessions will construct and carry out laboratory procedures pertinent to this course. Terminology relevant to this course is stressed.

3025 Integrated Basic Science II 48 4

A continuation of Integrated Basic Science I (3005). The subjects covered are the gastrointestinal system, respiratory system, genitourinary system, nervous system, endocrine system, ophthalmic and auditory systems.

3029 Preventive Dentistry/Diet and Nutrition 48 2

This course is to acquaint the student with the importance of preventive dentistry and to show how diet and nutrition play a part in preventive dentistry. The importance of good health, proper diet and nutrition are stressed, not only for the dental assistant, but also for the patient. Techniques for good oral hygiene are presented to be utilized by the patient at home, and procedures utilized in the dental office to assist the patient in maintaining good oral hygiene and dental health.

COURSE DESCRIPTIONS

Hours Credits

3031 Personal Development 24 2

This course enables students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming, wardrobe, personality, and communication skills so they possess the personal qualities considered necessary for employment in their chosen fields.

3033 Human Relations 36 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Stress is placed on oral communication and speaking to a group of people. The program is also set up to help provide individuals with personal and interpersonal skills to compliment their educational and vocational training.

3035 Dental Radiography 60 3

Instruction in the theory, history, principles and procedures in dental radiography techniques are presented. The production, development, mounting, evaluation, and filing methods of dental radiographs are learned. Experience in exposing and processing on and of a manikin's teeth and love patient's teeth are done. Components of the X-ray machine are covered. Personal and patient safety are stressed and biological effects of radiation are covered. Terminology relevant to this subject is stressed.

3036 Dental Office Management 48 3

The principles of administration planning, bookkeeping, filing, recall programs, banking, mail service and care, tax records, basic written communication, insurance, receiving and answering the telephone, office practice and management as related to the dental office are presented. Techniques of appointment control, records, receiving payments, credits and payment plans, and taking inventory are also stressed. The student will learn to operate the basic business machines utilized in the dental office.

3037 Preparation for Clinical Practice 48 2

An intensified course designed to prepare the student for Clinical Practice. Subjects to be presented are: Dental Decay, Cavity Preparation, Instrumentation, Effect of Clinical Situations for Cavity Preparation, Cement Bases, Cavity Liners, Cavity Varnish, Preparation of Operative Field, Instrumentation of Amalgam Restoration, Construction of Temporary Restorations and other Operative Procedures. The student in laboratory sessions will construct and carry out laboratory procedures pertinent to this course. Prerequisite: 3026

3040 First Aid and Pharmacology 36 3

Lectures and demonstrations about emergencies in the dental office and their emergency and dental treatment, and prevention are presented. The student will also participate in various aspects of first aid treatment in lab sessions as needed. Pharmacology as it applies to the dental field and the dental assistant's role is presented.

3041 Clinical Practice 264 7

Students placed in various private dental offices to gain experiences in the general and specialty areas of dentistry. Prerequisite: 3037

3042 Ethics/Jurisprudence 24 2

The role and responsibilities of the dental assistants, and dentist's legal and ethical requirements are stressed. The dental organizations, functions, principles, structures, and responsibilities as they pertain to the dental practice are presented.

EMERGENCY CARE TECHNICIAN

The Emergency Care Technician (ECT) Program will prepare students with both skill in routine procedures and in emergency treatment procedures as directed by the nursing team leader or the direct supervision of a physician. The student will be trained in the use of and care of equipment required to accomplish required tasks in the hospital and especially the emergency unit.

This program is especially helpful to people already employed in the emergency medical area, as well as those not previously employed. The broad base provided by this program (training in hospital as well as in ambulance) allows for employment in hospital emergency rooms, trauma centers, critical care centers, as well as in ambulance services.

Included as part of this program, Course 3214, Basic Emergency Medical Technician—Ambulance Techniques, is designed to prepare students for examination by the Commission on Emergency Medical Services of the State of Indiana as Emergency Medical Technician—Ambulance (EMT-A).

EMERGENCY CARE TECHNICIAN Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
3210 Integrated Basic Science I	48	4
3211 Medical Law and Ethics	24	2
3214 Basic Emergency Medical Technician-Ambulance Techniques	81	3
3215 Orientation to Emergency Medical Services	60	5
3216 Clinical Experience (AMB) I	88	3
3220 Integrated Basic Science II	48	4
3221 Basic Cardiology	36	3
3222 Introduction to Disease Conditions I	30	3
3223 Pharmacology I	24	2
3228 Medical/Surgical Techniques I	60	3
3229 Human Relations	36	3
*3244 Practicum	144	5
3230 Advanced Cardiology	60	5
3232 Disease Conditions II	30	3
3233 Pharmacology II	30	3
3235 Medical/Surgical Techniques II	60	3
3236 Clinical Experience II	144	5
3242 Clinical Experience III	384	9
3243 Seminar in ER Techniques	36	3

Total Contact Hours: 1,423
Total Credits: 71

*Optional

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills and mathematics skills, with supplementary material oriented toward Health Occupations.

3210 Integrated Basic Science I 48 4

The study of the human body as an integrated unit, including anatomy, physiology, medical terminology, and application of physics, chemistry and microbiology.

3211 Medical Law and Ethics 24 2

The ethics of medicine and medical practice are studied. Legal requirements and implications to medical professional and sub-professional practices are stressed.

3214 Basic Emergency Medical Technicians-Ambulance Techniques 81 3

This course provides for development of basic principles of emergency care in ambulance operation. The course includes skills development in basic procedures utilized in airway management, pulmonary depression and arrest, cardiac arrest, bleeding and shock, and management of acute medical and psychiatric problems. Principles of emergency care of wounds, burns and environmental injuries are presented, as well as related orthopaedic injuries and sterile techniques.

3215 Orientation to Emergency Medical Services 60 5

An introductory course, intended to acquaint the student with the basic principles of emergency medical care in practice. The course includes familiarization of the hospital environment so the student becomes accustomed to performing basic procedures smoothly, without embarrassment or inconvenience to the patient. Training is to be conducted in the Emergency Room of participating hospitals and in conjunction with the area ambulance service.

3216 Clinical Experience (AMB) I 88 3

Observation and application of basic emergency care techniques in an approved emergency service vehicle.

3220 Integrated Basic Science II 48 4
Continuation of Integrated Basic Science I (3215).

3221 Basic Cardiology 36 3

This course provides for recognition of the basic cardiology system, and includes instruction in cardio-physiology, pathology, electrocardiography and basic principles of cardiac monitoring.

3222 Introduction to Disease Conditions I 30 3

This course is designed to present basic concepts of disease, its causes, and the changes in the body functions that occur. Special emphasis on the functional disturbances are presented, correlating patient symptoms to emergency and in-patient treatment.

COURSE DESCRIPTIONS	Hours	Credits
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3223 Pharmacology I	24	2
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This course is designed to acquaint the ECT with drug administration, with special emphasis on weights and measures and accurate preparation of oral and hypodermic dosages. The course will introduce the ECT to the special precautions to be taken in the administration of drugs, as well as the legal obligations as part of the medical team.

3225 Medical/Surgical Techniques I	60	3
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This course is specifically formulated for the ECT student, and is designed to develop basic principles of sterile technique in relationship to the pre-operative and post-operative care of the patient. It includes an orientation to an ideal situation, adaption to basic principles, patient positioning and transportation; an understanding of basic concepts of anesthesiology; principles and skill in handling drapes, care of contaminated cases; understanding of explosion hazards and prevention of infection; processing and preparation of non-disposable items. Also covered are principles of sterilization, instrument identification, suture and needle use; care of surgical specimens; importance of accurate record keeping; surgical preps and skill in hand scrubbing, gowning and gloving procedures. Prerequisite: 3215

3230 Advanced Cardiology	144	5
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The course includes electrocardiology with emphasis on arrhythmias and myocardial infarction, interpretation of EKG and arrhythmiae, correlating patient symptoms and treatment. It will also include monitors and defibrillators with understanding of operations and electronics, a therapeutic approach to coronary systems, complications, shock, drugs and treatment. Prerequisite: 3221

3229 Human Relations	36	3
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In this course the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

COURSE DESCRIPTIONS	Hours	Credits
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3232 Disease Conditions II	30	3
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A continuation of Disease Conditions I (3222).

3233 Pharmacology II	30	3
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This course is designed to acquaint the student with the administration of drugs and includes instruction in the scope of pharmacology, classification of drugs, dosage forms, preparation, methods of administration, interactions and incompatibilities. The use of drugs and medications as related to emergency care in practice are stressed.

3235 Medical/Surgical Techniques II	60	3
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Continuation of Medical/Surgical Techniques I (3228).

3236 Clinical Experience II	144	5
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Clinical experience in cooperating hospitals enable students to correlate principles and concepts presented in the classroom emergency care in practice. Experiences include 50 hours in the emergency room, 30 hours in the cardiac care unit, 10 hours in obstetrics which includes prepartum, post-partum, delivery and recovery, and 40 hours in orthopedics. Prerequisite: 3228

3242 Clinical Experience III	384	9
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A situational review to enable the student to correlate principles and concepts presented in the classroom to emergency care in practice. Includes closely supervised observation and assistance in emergency departments, intensive care units and operating rooms of cooperating hospitals.

3243 Seminar in ER Techniques	36	3
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Case studies in emergency care situations, including correlation of concurrent Clinical Applications (3242).

3244 Practicum	144	5
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Experience in selected clinical procedures under the direct supervision of a physician. Required for EMT-2. Arranged by permission of the instructor.

MEDICAL ASSISTANT

The Medical Assistant program is designed to provide educational opportunity for individuals to develop administrative and clinical skills needed to assist physicians in offices, clinics or other health care agencies. Medical Assistants are also employed in hospitals, nursing homes and in the health insurance industry.

Growing demands on the time of physicians have made the medical office assistant one of the most rapidly growing and most important fields of work in recent years.

Duties of the Medical Assistant include: preparing patients for physical examination, cleaning and sterilizing equipment and maintaining supplies, collecting specimens, performing simple laboratory tests and carrying out the business-office activities of the doctor.

In addition to classroom study, each Medical Assistant will have experience in "on-the-job" practice under the direct supervision of a physician and a medical assistant. This practical experience is coordinated by a member of the College faculty.

Students who complete 46 prescribed credits in courses 3710 through 3733 may receive a technical certificate as a Medical Assistant, Grade I. After completion of the program, students are awarded the Associate Degree as Medical Assistant, Grade II. All graduates of AAMA/AMA accredited programs are eligible for and expected to take the certification examination offered by the American Association of Medical Assistants. Successful completion of this examination entitles the graduate to use the letters CMA after his/her name signifying the graduate is a Certified Medical Assistant.

MEDICAL ASSISTANT

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, typing, and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
3710 Integrated Basic Science I	48	4
3711 Medical Law and Ethics	24	2
3712 Medical Office Procedures Clinical I	96	6

Hours Credits

3713 Medical Office Bookkeeping	60	4
3720 Integrated Basic Science II	48	4
3721 Medical Office Procedures, Administrative	60	4
3722 Medical Typewriting I	72	3
3723 Personal Development	24	2
3724 Medical Linguistics I	48	2
3730 Medical Assistant Laboratory Techniques	72	4
3731 Medical Assistant Clinical Experience I	192	4
3732 Medical Office Communications	48	4
3733 Medical Typewriting II	72	3
3740 Medical Linguistics II	48	2
3741 Medical Office Procedures Clinical II	96	6
3742 Applied Psychology	36	3
3743 Machine Transcription, Medical I	60	3
3744 Microbiology	48	3
3750 Medical Office Procedures Clinical III	84	5
3751 Machine Transcription, Medical II	60	3
3752 Business Communications	36	3
3753 Drugs and Solutions	24	2
3760 Introduction to Data Processing	84	5
3761 Community Health	24	2
3762 Oral Communications	24	2
3763 Medical Office Management	36	3
3764 Payroll and Taxes	48	3

Total Contact Hours: 1,572

Total Credits: 91

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills, mathematics skills, and typing, with supplementary material oriented toward Health Occupations.

3710 Integrated Basic Science I 48 4

The study of the human body as an integrated unit, including anatomy, physiology, medical terminology, and application of physics, chemistry and microbiology.

3711 Medical Law and Ethics 24 2

The ethics of medicine and medical practice are studied. Legal requirements and implications to medical professional and sub-professional practices are stressed.

3712 Medical Office Procedures — Clinical I 96 6

This course is designed to familiarize the Medical Assistant with preparing the patient for examination in the physician's office; taking temperature, pulse, respiration, blood pressure; assisting the doctor; care and preparation of sterile equipment; methods of sterilization; care of stock medications and drug

COURSE DESCRIPTIONS	Hours	Credits
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samples; nutrition and special diets; X-Ray techniques; knowledge and care of instruments; needles, and syringes; ordering supplies; and appropriate action in emergency situations.

3713 Medical Office Bookkeeping	60	4
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A course designed to introduce the basic principles of bookkeeping as utilized primarily in a medical office setting. This course includes the principles of debit and credit, double entry bookkeeping, use of journals (particularly combined cost journal) and analyzing transactions. Also included are the use of ledgers, posting procedures, cash basis of accounting, handling petty cash, banking procedures, payroll, depreciation of accounts, balance work sheets and income statements.

3720 Integrated Basic Science II	48	4
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A continuation of Integrated Basic Science I (3710).

3721 Medical Office Procedures, Administration	60	4
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This course is designed to provide a basic understanding of the secretarial and bookkeeping duties and responsibilities as pertinent to the medical offices and health care agencies. It includes medical correspondence and records, insurance forms, case histories of patients, filing, financial administration, correct contact procedures with patients, hospitals, and professional agencies. It also includes considerations for desirable personality traits, interpersonal relationships, and attitudes within the medical office. Prerequisite: 3713

3722 Medical Typewriting I	72	3
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This course is designed to improve production typewriting ability in the medical field. Emphasis is placed on articles, medical forms, case histories and correspondence utilizing medical terminology.

3723 Personal Development	24	2
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This course enables students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming, wardrobe, personality and communication skills so they possess the personal qualities considered necessary for employment in their chosen field.

3724 Medical Linguistics I	48	2
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This course presents the ethics of medicine, professional conduct and words from Greek and Latin prefixes, suffixes, word roots and combining forms. It will teach the student meanings of medical words through the Greek and Latin parts, correct spelling of these terms, and the intelligent use of the medical dictionary.

3730 Medical Assistant Laboratory Techniques	72	4
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An introduction to various laboratory and X-Ray procedures with emphasis on preparation of the patient for various procedures, their purposes and the expected norms of results.

3731 Medical Assistant Clinical Experience I	192	4
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Applied learning experiences in selected physicians' offices, clinics and hospitals. Prerequisite: 3712, 3721

3732 Medical Office Communications	48	4
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Communications skills development directed toward the medical office are studied. Human relations necessary in medical office communications are emphasized.

3733 Medical Typewriting II	72	3
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A continuation of Medical Typewriting I (3722), with emphasis on development of speed and accuracy.

COURSE DESCRIPTIONS	Hours	Credits
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3740 Medical Linguistics II	48	2
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Medical terms in their proper relationship to the anatomy of the body and the related disease, anomalies and surgeries are studied.

3741 Medical Office Procedures — Clinical II	96	6
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This course is designed as an expansion of Medical Assistant Laboratory Techniques (3730). Special emphasis is placed on principles and procedures as they are related to office practice and the individual types of health.

3742 Applied Psychology	36	3
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This course presents study of psychological behavior in medical relationships. Information concerning human needs and behavior in health and illness is designed to improve individual attitudes, productivity and personal morale in working situations.

3743 Machine Transcription, Medical I	60	3
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This course is designed to provide a basic understanding of the techniques of dictation and transcription used by the medical assistant. Transcription in the following fields of medicine are studied: internal medicine, surgery, obstetrics, gynecology, pediatrics, orthopedics, otorhinolaryngology, urology, ophthalmology, neurology, psychiatry and dermatology.

3744 Microbiology	48	3
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Study includes an introduction to the basic principles of microbiology including definitions, classification, biological requirements and activities, specimen collection, infection, immunity, destruction and microbe description.

3750 Medical Office Procedures — Clinical III	84	5
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A continuation of Medical Office Procedures — Clinical II (3741).

3751 Machine Transcription, Medical II	60	3
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A continuation of Machine Transcription, Medical I (3743), with emphasis on case studies and reports.

3752 Business Communications	36	3
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The skills needed to write business communications are taught in this course. This includes preparation of action-getting letters, reports, and summaries of conferences. Emphasis is on business writing which is informative, concise and persuasive.

3753 Drugs and Solutions	24	2
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The objective of this course is to familiarize hygiene students with the basic aspects relating to the physical and chemical properties, dosage, methods of administration, and therapeutic use of pharmaceutical preparations used in the medical office.

3760 Introduction to Data Processing and Programming	84	5
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This course is designed to give a general introduction to data processing and programming with emphasis on electronic data processing. Topics include the development of data processing from manual methods through electromechanical to electronic, role of data processing in an organization, data processing applications, computer hardware, internal data representation, stored program concepts, programming systems, introduction to programming, operations research and data processing as a profession.

3761 Community Health	24	2
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A study of health services in the community; topics considered include preventative services, institutional components of health care systems, financing health care and manpower. A section of the course will consider general issues of quality of environment,

COURSE DESCRIPTIONS**Hours Credits**

pollution control and population control. A third section will be concerned with planning research and health problems as issues of public policy.

3762 Oral Communications**24 2**

Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.

3763 Medical Office Management**36 3**

This course supplies the background for organization and

COURSE DESCRIPTIONS**Hours Credits**

management of a physician's office and an in-depth study of governmental types of health insurance coverage.

3764 Payroll and Taxes**48 3**

Skills are developed in Federal and State withholding tax procedures. The student will learn to prepare periodic statements and withholding and income tax returns. Study of payroll systems as applied to the medical office.

OBSTETRICAL TECHNICIAN

The Obstetrical Technician performs assigned tasks in preparing for and assisting with procedures in the delivery room and other obstetrical (OB) units in the hospital. Duties include setting up instruments and supplies, scrubbing with the physician for normal deliveries and cesarean section, anticipating his needs during the delivery, and managing contaminated instruments and supplies utilizing strict aseptic technique. The OB Technician also assists with admission of OB patients by taking patients' vital signs, detecting fetal heartbeat, and detecting abnormalities in labor and recovery.

The OB Technician program is four quarters (12 months) in duration and encompasses theory and clinical practice in hospital obstetrics, surgery and gynecology departments.

OBSTETRICAL TECHNICIAN

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
4010 Surgical Anatomy I	60	5
4011 Operating Room Techniques I	168	5
4012 Microbiology For Operating Room Technicians	36	3
4013 Medical Ethics and Personal Health	24	2
4020 Surgical Anatomy II	36	3
4021 Operating Room Techniques III	72	5
4022 Surgical Procedures I	60	5
4023 Clinical Applications I	240	3
4030 Obstetrical Procedures I	96	7
4031 Obstetrical Clinical Applications I	240	3
4032 Human Relations	36	3
4040 Obstetrical Procedures II	60	5
4041 Obstetrical Clinical Applications II	336	7

Total Contact Hours: 1,464
Total Credits: 56

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills and mathematics skills, with supplementary material oriented toward Health Occupations.

4010 Surgical Anatomy I 60 5

A study of the anatomy and physiology of the human body as an integrated unit. The basic approach of dividing the body into its basic systems and then correlating the system with specific surgical procedures is used. Emphasis is put on structure specific to the operating room. The course includes the body as a whole, the skin, general survey, the skeletal, muscular, cardiovascular, lymphatic and the respiratory systems.

4011 Operating Room Techniques I 168 5

This course is concerned with development of basic principles of sterile technique in relationship to the pre-operative, operative and post-operative care of the patient. It includes an orientation to an ideal situation, adoption of basic principles, patient positioning and transportation, the understanding of basic concepts of anesthesiology, principles and skill in handling drapes, care of contaminated cases, understanding of explosion hazards and prevention of infections, processing, and preparation of non-disposable items, principles of sterilization, instrument identification, suture and needle use, care of surgical specimens, importance of accurate record keeping, surgical preps and skill in hand scrubbing and gowning and gloving procedures.

4012 Microbiology for Operating Room Technicians 36 3

This course is specifically formulated for the Operating Room Technician student and is designed to give this student a basic background in the study of microbes, microbial pathogens, methods of studying microbes, and microbial destruction. The basic knowledge of microbiology presented is correlated by the Operating Room Technician, in the operating room, the obstetrical unit, and the emergency room.

4013 Medical Ethics and Personal Health 24 2

This course presents the ethics of medicine, professional conduct and personal habits that are expected of allied health workers.

4020 Surgical Anatomy II 36 3

A study of the human body as a whole or integrated unit correlating the systems of the body with specific surgical procedures including the digestive, urinary, nervous, reproductive and endocrine systems with an emphasis on structures specific to the operating room.

4021 Operating Room Techniques II 72 5

This course is concerned with the practical application of aseptic technique. Role playing is used to help the student have experience. In applying all phases of aseptic technique and to learn step by step procedures for typical general surgery operations.

COURSE DESCRIPTIONS	Hours	Credits
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4022 Surgical Procedures I	60	5
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A basic study of surgical procedures in relation to the total physiological aspects of surgical interaction. This includes a concept of the involved anatomy, existing pathology, surgical hazards encountered, surgical procedure and a review of the total patient including typical patient, diagnostic tests, and immediate post-operative care.

4023 Clinical Applications I	240	3
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Clinical experience in the cooperating hospitals will enable the Operating Room Technician student to correlate the basic principles and concepts of classroom lecture to the working situation. Experiences include scrubbing and circulating on selected major and minor operations, observing and assisting with selected diagnostic procedures, observing and assisting with procedures in obstetrics and the emergency room. Prerequisite: 4010, 4011

4030 Obstetrical Procedures I	96	7
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Basic nursing procedures for mothers and newborn, including labor, delivery room, post-partum care, and basic nursery techniques. Prerequisite: 4020

COURSE DESCRIPTIONS	Hours	Credits
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4031 Obstetrical Clinical Applications I	240	3
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Clinical experience in cooperating hospitals in the Obstetrical-Gyn service including preparation and observation of labor patients, assisting in delivery rooms and post-partum care. Experiences also include newborn nursery and care of the gynecologic patient.

4032 Human Relations	36	3
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In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

4040 Obstetrical Procedures II	60	5
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Nursing care of gynecological patients including diagnostic-therapeutic measures and post-operative care.

4041 Obstetrical Clinical Applications II	336	7
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Continuation of Obstetrical Clinical Applications I (4031).

OPERATING ROOM TECHNICIAN

Somewhat new in the field of medicine is the Operating Room Technician (ORT). The ORT works under the supervision of a registered nurse in the operating room as a vital member of the surgical team. The ORT assists the physician by selecting and preparing instruments for surgery, preparing patients for surgery, passing sterile instruments to the surgeon, and cleaning and maintaining equipment.

There is an urgent need for operating room technicians to work in hospital operating rooms, trauma centers and delivery rooms. The work offers a fairly flexible schedule as ORT's are needed around the clock.

This one-year program leads to a technical certificate. The program includes classroom instruction and "on-the-job" practical experience in affiliating hospitals. Clinical experience is coordinated and supervised by college operating room technician faculty members. Graduates of the program are qualified for the national examination for Operating Room Technicians.

OPERATING ROOM TECHNICIAN

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
4210 Surgical Anatomy I	60	5
4211 Operating Room Techniques I	168	5
4212 Medical Ethics and Personal Health	24	2
4213 Microbiology for Operating Room Technicians	36	3
4220 Surgical Anatomy II	36	3
4221 Surgical Procedures I	60	5
4222 Clinical Applications I	240	3
4223 Operating Room Techniques II	72	5
4230 Surgical Procedures II	60	5
4231 Clinical Applications II	336	7
4240 Clinical Applications III	336	7
Electives to total	96	8

Total Contact Hours: 1,524
Total Credits: 58

Electives:	Hours	Credits
4232 Obstetrical Techniques	36	3
4233 Human Relations	36	3
4241 Emergency Room Techniques	24	2
4242 Surgical Procedures III	60	5

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills and mathematics skills, with supplementary material oriented toward Health Occupations.

4210 Surgical Anatomy I 60 5

A study of the anatomy and physiology of the human body as an integrated unit. The basic approach of dividing the body into its basic systems and then correlating the system with specific surgical procedures. Emphasis is put on structure specific to the operating room. The course includes the body as a whole, the skin, general survey, the skeletal, muscular, cardiovascular, lymphatic and the respiratory systems.

4211 Operating Room Techniques I 168 5

This course is concerned with development of basic principles of sterile technique in relationship to the pre-operative, operative and post-operative care of the patient. It includes an orientation to an ideal situation, adoption of basic principles, patient positioning and transportation, the understanding of basic concepts of anesthesiology, principles and skill in handling drapes, care of contaminated cases, understanding of explosion hazards and prevention of infections, processing, and preparation of non-disposable items, principles of sterilization, instrument identification, suture and needle use, care of surgical specimens, importance of accurate record keeping, surgical preps and skill in hand scrubbing and gowning and gloving procedures.

4212 Medical Ethics and Personal Health 24 2

This course presents the ethics of medicine, professional conduct and personal habits that are expected of allied health workers.

4213 Microbiology for Operating Room Technicians 36 3

This course is specifically formulated for the operating room technician student and is designed to give this student a basic background in the study of microbes, microbial pathogens, methods of studying microbes, and microbial destruction. The basic knowledge of microbiology presented is correlated by the operating room technician in the operating room, the obstetrical unit, and the emergency room.

4220 Surgical Anatomy II 36 3

A study of the human body as a whole or integrated unit correlating the systems of the body with specific surgical proce-

COURSE DESCRIPTIONS	Hours	Credits
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dures including the digestive, urinary, nervous, reproductive and endocrine systems with an emphasis on structures specific to the operating room.

4221 Surgical Procedures I	60	5
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A basic study of surgical procedures in relation to the total physiological aspects of surgical interaction. This includes a concept of the involved anatomy, existing pathology, surgical hazards encountered, surgical procedure and a review of the total patient including typical patient, diagnostic tests, and immediate post-operative care.

4222 Clinical Applications I	240	3
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Clinical experience in the cooperating hospitals will enable the operating room technician student to correlate the basic principles and concepts of classroom lecture to the working situation. Experiences include scrubbing and circulating on selected major and minor operations, observing and assisting with selected diagnostic procedures and observing and assisting with procedures in obstetrics and the emergency room.

4223 Operating Room Technique II	72	5
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This course is concerned with the practical application of aseptic technique. Role playing is used to help the student have experience. In applying all phases of aseptic technique and to learn step by step procedures for typical general surgery operations.

4230 Surgical Procedures II	60	5
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A study of advanced and specialized surgical procedures, in relation to the total physiological aspects of surgical interaction. This includes a concept of the involved anatomy, existing pathology, surgical hazards encountered, surgical procedures and a review of total patient including typical patient, diagnostic tests, and immediate post-operative care.

COURSE DESCRIPTIONS	Hours	Credits
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4231 Clinical Applications II	336	7
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A continuation of Clinical Applications I (4222).

4232 Obstetrical Techniques	36	3
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This course is designed to give the operating room technician student a basic understanding of the effect of pregnancy anatomically, physiologically, and psychologically on the obstetric patient. It is formulated to enable the operating room technician student to function in the obstetrical unit, and in the operating room on obstetrical cases, with a basic understanding of obstetrics.

4233 Human Relations	36	3
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In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

4240 Clinical Applications III	336	7
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A continuation of Clinical Applications II (4231).

4241 Emergency Room Techniques		
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This course is designed to give the operating room technician student a basic understanding of the psychological and physiological effect of trauma on the emergency patient. It is formulated to give the operating room technician student a basic knowledge of emergency conditions, emergency procedures, and to enable the operating room technician student to function under adverse conditions that threaten a patient's well being.

4242 Surgical Procedures III	60	5
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Study of specialized procedures in neuro-surgery, cardiovascular surgery and chest surgery. Pertinent anatomy and pathology as well as diagnostic tests and immediate post-operative care are stressed.

PRACTICAL NURSING

Practical nurses are needed to help care for medical and surgical patients, convalescents, handicapped people, and others who are ill. They work under the direction of physicians and professional nurses and perform a service vital to the people in a community.

In a hospital, a licensed practical nurse (LPN) works with other medical personnel as a member of the nursing team. Her duties in providing bedside care include taking and recording temperatures and blood pressures, changing dressings, administering certain prescribed medicines, bathing the patient, and helping in other ways.

Opportunities for employment may be found in hospitals, nursing homes, clinics, physicians' offices, sanitariums, long-term health-care facilities, public health agencies, and welfare and religious organizations.

The Practical Nursing program meets the requirements of the Indiana State Board of Nurses' Registration and Education and prepares candidates for licensure as a practical nurse in the State of Indiana.

Graduates of the practical nursing program will be awarded a technical certificate by the College. The program includes courses in basic science and nursing skills as well as extensive practical clinical experience in hospitals, nursing homes and other health care agencies. Clinical experience is under the direct supervision of the College Practical Nursing faculty.

Practical Nursing students are expected to achieve satisfactory performance levels, as determined by the practical nursing department, in both theoretical and clinical areas of the program.

PRACTICAL NURSING

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in Sequence)

	Hours	Credits
4410 Basic Science (Anatomy and Physiology)	96	8
4411 Nursing Techniques and Care I	216	12
4420 Nursing Techniques and Care II	96	8
4421 Medical-Surgical Nursing Experience I	216	6

	Hours	Credits
4422 Nutrition	24	2
4423 Seminar	24	2
4430 Nursing Techniques and Care III	60	5
4431 Medical-Surgical Nursing Experience II	288	8
4432 Personal and Community Health	24	2
4440 Maternal and Child Health	60	5
4441 Personal and Vocational Relations	24	2
4442 Maternal Child Care Practice	288	8

Total Contact Hours: 1,416
Total Credits: 68

COURSE DESCRIPTIONS

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills and mathematics skills, with supplementary material oriented toward Health Occupations.

4410 Basic Science (Anatomy and Physiology) 96 8

The course is designed to study the human body as an integrated unit including Anatomy, Physiology, Medical Terminology, Microbiology and an introduction to the study of common disease.

4411 Nursing Techniques and Care I 216 12

This course defines the role of the Practical Nurse and her relationship with members of other health teams. It is designed in harmony with current health practices emphasizing basic principles necessary for development of knowledge, skills and understanding in giving safe patient care.

4420 Nursing Techniques and Care II 96 8

The nursing care of adults of all ages with varying degrees of common disease conditions. Included in the study are the causes, symptoms and diagnostic tests of conditions such as allergies and cancer and disorders of the musculoskeletal, cardiovascular and respiratory systems, and the gastrointestinal system including metabolism. Disease conditions or disorders of the endocrine system, the genito-urinary and reproductive systems, the skin, nervous systems and disorders of the eye and ear are studied. Integrated throughout is the management of disease through diet therapy and appropriate nursing measures.

4421 Medical-Surgical Nursing Experience I 216 6

Supervised clinical assignments in selected hospitals, extended care facilities and nursing homes in medical and surgical nursing.

4422 Nutrition 24 2

Study of the basic principles of nutrition and the relation of these principles of health care. Dietary allowances for various age groups as well as socio-economic, ethnic, and religious food preferences are discussed.

COURSE DESCRIPTIONS	Hours	Credits
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4423 Seminar	24	2
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Trends of vocational nursing, including historical development of nursing and the role of the practical nurse in relation to the functions of other members of the health care team. Communication skills functional to practical nursing are emphasized. Understanding the role of the practical nurse in hospitals, nursing homes and other health care agencies is stressed.

4430 Nursing techniques and Care III	60	5
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A continuation of Nursing Techniques and Care II (4420).

4431 Medical-Surgical Nursing Experience I	288	8
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A continuation of Medical-Surgical Experience I (4421).

4432 Personal and Community Health	24	2
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Common community health concerns are explored, such as: drug, alcohol, and smoking abuse; venereal disease; environmental control; consumer protection; and preventative health care. Specific agencies that contribute to the well being of individuals are discussed. The emphasis of the course is upon healthful living practices and problem solving techniques.

COURSE DESCRIPTIONS	Hours	Credits
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4440 Maternal and Child Health	60	5
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To prepare the student practical nurse with the techniques to meet the needs of both the mother and baby through understanding the maternity cycle of the mother, the growth, development and care of infants and children in both health and illness.

4441 Personal and Vocational Relations	24	2
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Exploration of human motivation to gain maturity and personal satisfaction as an individual, a nurse and a citizen. The student is assisted with application and licensure and helped to understand the legal, ethical and social responsibilities of a licensed practical nurse. The emphasis is upon assisting the student to become a well-adjusted and valuable employee.

4442 Maternal and Child Care Practice	228	8
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This course includes practice in care of the individual at the time of pregnancy and birth, care of the newborn infant, and growth and development of the child through the teen years. The more common complications of pregnancy and birth as well as care of the well and sick child are included.

RADIOLOGIC TECHNOLOGY

Radiologic technology plays a major role in the diagnostic and therapeutic field of medicine. Radiological technologists prepare patients for X-ray, position them and, after determining the proper voltage, current and desired exposure time, operate the controls. They work under the direction of a radiologist.

About a third of the radiologic technologists work in hospitals. Others work in medical laboratories, physicians' and dentists' offices, clinics, public school systems, or for federal and state health agencies.

Other technologists may work in the new field of nuclear medicine in which radioactive isotopes are used for diagnosing and treating diseases. Duties in this field include assisting the radiologist in preparing and administering the prescribed radioisotope and operating special equipment for tracing and measuring radioactivity.

This curriculum introduces the student to the principles of radiologic technique, exposure, therapy, positioning, protection, and ethics and is conducted with clinical practice and supplemental instruction in the accredited hospitals.

Radiologic Technology is a two-year program offered by the College as a cooperative educational institution affiliated with hospital-approved schools of Radiologic Technology accredited by the American Registry of Radiologic Technologists. At the completion of the two-year program, the College awards an Associate of Applied Sciences Degree.

RADIOLOGIC TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
4610 Medical Ethics and Personal Health	24	2
4611 Integrated Basic Science I	48	4
4612 Radiation Physics I	24	2
4613 X-Ray Technology	60	5
4614 Nursing Procedures for X-Ray Technicians	24	1

Hours Credits

4615 Orientation to Radiologic Technology	96	0
4616 Fundamentals of Mathematics	60	5
4620 Integrated Basic Science II	48	4
4621 Radiation Physics II	24	2
4622 Principles of Radiographic Exposures I	12	1
4623 Radiographic Positioning I	12	1
4624 Film Critique I	36	3
4625 X-Ray Clinical Practice I	348	1
4630 Human Relations	36	3
4631 Principles of Radiographic Exposures II	24	2
4632 Radiographic Positioning II	24	2
4633 Film Critique II	36	3
4634 X-Ray Clinical Practice II	348	1
4635 Film Quality	12	1
4640 Principles of Radiographic Exposures III	24	2
4641 Radiographic Positioning III	24	2
4642 Introduction to Technical Communications	36	2
4643 Film Critique III	36	3
4644 X-Ray Clinical Practices III	348	1
4645 Community Health	24	2
4650 Microbiology	24	2
4651 Radiographic Positioning IV	24	2
4652 Special Procedures I	24	2
4653 Departmental Administration I	24	2
4654 Film Critique IV	36	3
4655 X-Ray Clinical Practice IV	348	1
4660 Oral Communications	24	2
4661 Radiation Therapy Positioning	24	2
4662 Special Procedures II	24	2
4663 Departmental Administration II	24	2
4664 Film Critique V	36	3
4665 X-Ray Clinical Practice V	348	1
4670 Radiation Therapy	24	2
4671 Special Procedures III	24	2
4672 Accounting I	48	4
4673 Film Critique VI	36	3
4674 X-Ray Clinical Practice VI	348	1
4680 Introduction to Data Processing	48	3
4681 Equipment Maintenance	24	2
4682 General Examination Review	36	3
4683 Film Critique VII	36	3
4684 X-Ray Clinical Practices VII	348	1

Total Contact Hours: 3,720
Total Credits: 103

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills and mathe-

COURSE DESCRIPTIONS	Hours	Credits
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atics skills, with supplementary material oriented toward Health Occupations.

4610 Medical Ethics and Personal Health	24	2
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This course presents the ethics of medicine, professional conduct and personal habits that are expected of allied health workers.

4611 Integrated Basic Science I	48	4
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The study of the human body as an integrated unit, including anatomy, physiology, medical terminology, and applications of physics, chemistry and microbiology.

4612 Radiation Physics I	24	2
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An introduction to the science of Radiation Physics essential for an understanding in the production of X-Ray, including radiation protection.

4613 X-Ray Technology	60	5
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The theory of X-Ray exposure factors, which enables the student to correlate this knowledge to practical application, and acquaints the student with the care and handling of film and processing equipment.

4614 Nursing Procedures for X-Ray Technicians	24	1
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The basic knowledge of nursing procedures pertinent to X-Ray technology.

4615 Orientation to Radiologic Technology	96	0
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The application of classroom and laboratory learning in the affiliating hospital school including an introduction to the radiology department and the hospital facility, office procedures, safety and first aid, and the routines pertinent to exposure factors and positioning.

4616 Fundamentals of Mathematics	60	5
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A course covering some of the topic of Intermediate Algebra and Trigonometry. Factoring and linear equations are included as well as fundamental trigonometric functions and solutions of triangles.

4620 Integrated Basic Science II	48	4
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A continuation of Integrated Basic Science I (4611).

4621 Radiation Physics II	24	2
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A continuation of Radiation Physics I (4612).

4622 Principles of Radiographic Exposure I	12	1
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Radiographic Exposure I provides the student with a complete and thorough working knowledge of the manipulation of exposure factors.

4623 Radiographic Positioning I	12	1
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This course provides the student with precise and detailed information of radiographic positioning of the structures and organs of the body.

4624 Film Critique I	36	3
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Introduces the student to constructive criticisms by the radiologists and instructors of X-Ray films providing the student with the knowledge of quality X-Rays, plus classes deemed necessary by the teaching supervisor and the College's teacher coordinator throughout the course.

4625 X-Ray Clinical Practices I	348	1
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The actual application of classroom and laboratory learning in the affiliating hospital school including radiographic positioning.

COURSE DESCRIPTIONS	Hours	Credits
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4630 Human Relations	36	3
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In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

4631 Principles of Radiographic Exposure II	24	2
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Radiographic Exposure II provides the student with an understanding of basic principles needed to construct charts for all situations and all technique ranges, and to acquaint the student with image intensification, cine, cameras, and TV systems.

4632 Radiographic Position II	24	2
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This section provides more precise and more detailed information of radiographic positioning.

4633 Film Critique II	36	3
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A continuation of Film Critique I (4624).

4634 X-Ray Clinical Practices II	348	1
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A continuation of X-Ray Clinical Practices I (4625).

4635 Film Quality	12	1
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A lecture course presenting advanced information for the production of quality films.

4640 Principles of Radiographic Exposure III	24	2
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This section is devoted to the more refined radiographic exposures with emphasis on exposure factors for pediatric patients.

4641 Radiographic Positioning III	24	2
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This section is more detailed positioning with the troublesome special positions the student may encounter in the second year, with emphasis on pediatric positioning.

4642 Introduction to Technical Communications	36	2
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After individual testing to determine specific language needs, this course provides for extensive training in general writing, listening, reading and speaking. Emphasis is placed on the use of logic in the development of written and oral ideas.

4643 Film Critique III	36	3
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A continuation of Film Critique II (4633).

4644 X-Ray Clinical Practices III	348	1
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A continuation of X-Ray Clinical Practices II (4634).

4645 Community Health	24	2
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A study of health services in the community; topics considered include preventative services, institutional components of health care systems, financing health care and manpower. A section of the course will consider general issues of quality of environment, pollution control and population control. A third section will be concerned with planning research and health problems as issues of public policy.

4650 Microbiology	24	2
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Nature and properties of microorganisms — bacteria, viruses, fungi, and parasites — with particular reference to their role in human disease. Basic principles of microbial physiology and of the interaction between infectious agents and man. Basic methods of isolation and identification of microorganisms are performed in the laboratory.

4651 Radiographic Positioning IV	24	2
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This section is a more refined positioning. The student will be assisting the radiologists in a more professional capacity.

COURSE DESCRIPTIONS	Hours	Credits
4652 Special Procedures I	24	2
This course acquaints the student with specialized and highly technical procedures used in Radiography.		
4653 Departmental Administration I	24	2
The lecture course consisting of acquaintance with organization, function, supervision and financial arrangements relative to departments of radiology.		
4654 Film Critique IV	36	3
A continuation of Film Critique III (4643).		
4655 X-Ray Clinical Practices IV	348	1
A continuation of X-Ray Clinical Practices III (4644).		
4660 Oral Communications	24	2
Through intensive training in informative, persuasive and special purposes presentations, speech skills are developed.		
4661 Radiation Therapy Positioning	24	2
This section of positioning introduces the student to precise positioning of therapy patient in order for them to assist the radiologists.		
4662 Special Procedures II	24	2
This section provides the student with working knowledge of specialized and highly technical procedures and an introduction to the contrast media used by the physicians and radiologists.		
4663 Departmental Administration II	24	2
The student's function with the radiology and administrative departments.		
4664 Film Critique V	36	3
A continuation of Film Critique IV (4654).		
4665 X-Ray Clinical Practices V	348	1
A continuation of X-Ray Clinical Practices IV (4655).		

COURSE DESCRIPTIONS	Hours	Credits
4670 Radiation Therapy	24	2
An introduction to assisting the radiologists with the radiation therapy necessary for treatment of tumors and all diseases requiring radiation therapy and the diagnostic value of radioactive isotopes.		
4671 Special Procedures III	24	2
This course provides the student with more refined procedures and an introduction to intraoral Radiography.		
4672 Accounting I	48	4
An introduction to the fundamental principles, techniques and tools of accounting. An understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises. Included are practical applications of the principles learned.		
4673 Film Critique VI	36	3
A continuation of Film Critique V (4664).		
4674 X-Ray Clinical Practices VI	348	1
A continuation of X-Ray Clinical Practices V (4665).		
4680 Introduction to Data Processing	48	3
This course covers the history of data processing, scope and significance of data processing, punched card unit records, electronic data processing equipment and basic computer concepts.		
4681 Equipment Maintenance	24	2
An understanding of X-Ray machinery and the fundamentals of preventive maintenance.		
4682 General Examination Review	36	3
This section is a general review of all sections pertinent to the student's examination by the A.R.R.T.		
4683 Film Critique VII	36	3
A continuation of Film Critique VI (4673).		
4684 X-Ray Clinical Practices VII	348	1
A continuation of X-Ray Clinical Practices VI (4674).		

Respiratory therapy is one of the newest allied health specialties. It is the treatment, management and care of patients who have a deficient or abnormal respiratory condition. It involves the therapeutic use of medical gasses, air and oxygen administering apparatus, environmental control systems, humidification and aerosols, drugs, and medications, ventilatory control, postural drainage, chest physio-therapy and breathing exercises, respiratory rehabilitation, assistance with cardiopulmonary resuscitation, and the maintenance of natural, artificial and mechanical airways.

The technician works under competent medical supervision but must be able to make fundamental and sound judgments about the application of specific procedures for individual patients. It is essential for the technician to understand, maintain and care for complex pulmonary and respiratory equipment.

There is an urgent need for respiratory therapy technicians to work with physicians and nurses as a team to help patients with respiratory disease. Hospitals employ the greatest number of respiratory therapy personnel, but employment opportunities are increasing at medical clinics and in physicians' offices.

Students study basic sciences, anatomy and physiology as well as inhalation therapy techniques. Clinical practice is provided in cooperating hospitals and clinics under the supervision of a physician and Respiratory Therapist. Coordination of the clinical practice is under the direction of a member of the College faculty.

RESPIRATORY THERAPY TECHNICIAN

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

In addition, the college offers short preparatory programs in Health Occupations which may prove helpful for students wishing to enroll in this program.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
4810 Basic Science	48	4
4811 Anatomy and Physiology	48	4
4812 Respiratory Therapy Science I	96	6
4813 Nursing Techniques for Respiratory Therapy	48	3
4820 Cardiopulmonary Physiology	48	4

RESPIRATORY THERAPY TECHNICIAN

	Hours	Credits
4821 Respiratory Therapy Science II	96	6
4822 Respiratory Therapy Application I	100	5
4823 Clinical Practicum I	160	3
4830 Laboratory Data	48	3
4831 Clinical Medicine	48	4
4832 Respiratory Therapy Applications II	100	5
4833 Clinical Practicum II	200	5
4841 Clinical Practicum III	480	13

Total Contact Hours: 1,520
Total Credits: 65

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on reading skills, mathematics skills, and science, with supplementary material oriented toward Health Occupations.

4810 Basic Science 48 4

Study of the fundamentals and principles of chemistry, physics and mathematics related to respiratory therapy. English and metric measuring systems and symbol systems are introduced. General gas laws related to gas transport are stressed.

4811 Anatomy and Physiology 48 4

Study of the human body by basic system. Specific disease conditions related to respiratory therapy are presented.

4812 Respiratory Therapy Science I 96 6

This course gives a brief history of the respiratory therapy and acquaints the student with the principles and practices of oxygen administration, humidity and aerosol therapy. Emphasis is placed on safety and equipment.

4813 Nursing Techniques
for Respiratory Therapy 48 3

A basic course in nursing arts which includes patient needs, asepsis, vital signs, isolation techniques and charting.

4820 Cardiopulmonary Physiology 48 4

In depth study of the cardiopulmonary system with emphasis on airway management. Prerequisite: 4812

4821 Respiratory Therapy Science II 96 6

Students are acquainted with the principles and practices of mechanical respirators, airway management, chest physio-therapy, and pharmacology applied to respiratory therapy.

4822 Respiratory Therapy Applications I 100 5

Students are given the opportunity to study the various applications of respiratory therapy by observation. Students are rotated through various clinical areas. Prerequisite: 4812

COURSE DESCRIPTIONS	Hours	Credits
4823 Clinical Practicum I	160	3
Students develop skills and knowledge by performing the various respiratory therapy tasks in clinical areas under supervision. Prerequisite: 4812		

4830 Laboratory Data	48	3
This course provides the student with an understanding of techniques for sputum collection, lung function testing and blood gas analysis. Prerequisite: 4812, Co-requisites: 4820, 4821, and 4831		

COURSE DESCRIPTIONS	Hours	Credits
4831 Clinical Medicine	48	4
Introduction to etiology, symptomology, diagnosis, therapeutics and prognosis of disease conditions related to respiratory therapy.		

4832 Respiratory Therapy Applications II	100	5
A continuation of Respiratory Therapy Applications I (4822).		

4833 Clinical Practicum II	200	5
A continuation of Clinical Practicum I (4823).		

4841 Clinical Practicum III	480	13
A continuation of Clinical Practicum II (4833).		

Agriculture occupations afford many opportunities for excellent employment. Increased specialization and mechanization in agriculture have fostered new occupations. Today's farms are larger, more specialized, and produce a higher volume of produce per person than ever thought possible. With this increased mechanization, the need for skilled technicians to fill positions in the manufacturing, selling and servicing of agricultural equipment and suburban garden equipment has increased.

The agricultural equipment technology, program gives the student a thorough understanding of servicing, repairing and maintaining all types of agricultural equipment.

The agricultural equipment option will include the study of plows, disks, harrows, cultivators, fertilizer applicators, forage and grain harvesting equipment, hay balers, grain dryers, processing and material handling equipment.

Special emphasis is placed on developing an understanding of the effects of agricultural chemicals on the environment and the need for proper calibration, application and maintenance of this equipment.

The student will tune, adjust and repair gasoline and diesel engines, in addition to the electrical, hydraulic power train, final drives, steering and braking systems.

Employment opportunities may be found with agricultural equipment manufacturers, retail and distributing organizations and farm supply and food processing industries.

The industrial equipment option will include the study of machines and equipment, such as: back hoes, earth movers, graders, skidders, bulldozers, loaders and forestry equipment.

Employment opportunities may be found in industrial equipment manufacturers, retail dealers, construction contractors and road builders.

AGRICULTURAL EQUIPMENT TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
5113 Tractor Engines	180	8
5114 Electrical Equipment Fundamentals	60	4

AGRICULTURAL EQUIPMENT TECHNOLOGY

	Hours	Credits
5123 Agricultural Diesel 1	72	4
5124 Tractor Systems	156	8
5125 Tractor Hydraulic Systems	72	4
5132 Agricultural Diesels II	180	8
5133 Environmental Control	60	4
5142 Suburban Garden Equipment	120	6
*5144 Final Drives and Tracks	120	6
5145 Agricultural Chemical Equipment	180	8
*5143 Industrial Diesels	180	8
5154 Farm Machinery I	180	8
*5156 Industrial Hydraulics	180	8
5152 Human Relations	60	4
5155 Parts and Service Department Management	60	5
5164 Farm Machinery II	180	8
*5165 Industrial Transmissions	180	8
5166 Sales and Marketing	60	5
5167 Psychology	60	3
Electives to total	120	6
Total Contact Hours:	1,800	
Total Credits:		93

Electives:

5190 Introduction to Welding	60	3
5191 Farm Shop	60	3
5192 Vehicular Air Conditioning	60	3
5193 Basic Machining	60	3

* Alternate courses taken by students pursuing the Industrial Equipment Option.

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the agricultural industry.

5113 Tractor Engines 180 8

A course including the basic components of an engine and how they relate to the engine as a whole. The block and head characteristics of gasoline and L-P tractors will be studied along with tune up and maintenance requirements of each. Overhaul procedure governed by the Technical Manual of the Manufacturer will be taught in the laboratory portion of the course. Lubricants, fuels and coolants will be covered at time of component study. Communications skills are also included.

5114 Electrical Equipment Fundamentals 60 4

A course dealing in the electrical functions of all three fueled engines as related to the charging, generating and storage components. Ignition circuits of gasoline and L-P tractors will be covered also. Protective devices will be covered in this course.

COURSE DESCRIPTIONS	Hours	Credits
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5123 Agricultural Diesels I	72	4
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This basic diesel course will cover principles and structure of engines used in tractors, self-propelled field machines and industrial applications. Laboratory engines will be disassembled and reassembled using the Technical Manual of the engine for specifications.

5124 Tractor Systems	156	8
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The three types of transmissions will be studied in this course. Torque converters and their application will be covered in this course. Steering, brakes, planetary systems, final drives and power take off mechanisms will be studied in class as well as on laboratory units. Communications skills are also included. Prerequisite: 5113

5125 Tractor Hydraulic Systems	72	4
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This course is a study of the principles of hydraulics and their application to farm machinery, including components of tractor hydraulic systems, testing maintenance and repair of hydraulic systems. It emphasizes laboratory study of hydraulic circuits, systems, power steering units and transmissions to identify and correct maladjustments.

5132 Agricultural Diesels II	150	8
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A comprehensive course in diesel pumps and nozzles, their function, testing and servicing. Governor setting to accomplish rated horsepower will be done by procedures given in Technical Manual of the engine while the unit is on a dynamometer. Heavy emphasis will be given those preventive maintenance skills which prevent most engine failures. Oral communications also included.

5133 Environmental Control	60	4
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An in-depth study of our natural resources and where we stand today in the battle of their preservation. Agriculture's responsibility in the areas of soil, water and air pollution will also be covered in depth.

5142 Suburban Garden Equipment	120	6
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A course in merchandizing suburban lawn and garden tractors and their many assorted attachments. Air cooled engines overhaul and maintenance will be covered in this course.

*5143 Industrial Diesels	180	8
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An in-depth study of diesel engines used in off the road industrial applications involving back hoes, earth movers, graders, skidders, bulldozers, loaders and forestry equipment. Technical mathematics are also included. Prerequisite: 5132

*5144 Final Drives and Tracks	120	6
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This course will cover the maintenance and repair of industrial final power drive reduction units and track laying trends. Preload and backlash of these units will carry maximum emphasis. Pin and bushing installation of tracks will be studied. Proper operation of these complete units will also be covered. Prerequisite: 5124

5145 Agricultural Chemical Equipment	180	8
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A course to provide the student with the knowledge and understanding needed to select, operate, adjust, service, maintain and repair equipment used in the application of agricultural chemicals. Applied mathematics is also included.

5152 Human Relations	60	4
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In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is de-

COURSE DESCRIPTIONS	Hours	Credits
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signed to improve individual attitudes, productivity and personal morale in working situations.

5154 Farm Machinery I	180	8
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This course of study deals with soil tillage tools. The set-up, adjustment, pre-delivery and demonstration of these tools will be covered. This will include plows, discs, harrows, multiple purpose tools, rotary hoes, cultivators, and power tillers. Applied geometry is also included.

5155 Parts and Service Department Management	60	5
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This course deals in the science of operating the parts and service department under accepted management procedures documented by the successful dealers of the industry. Profit margins and labor sales techniques are discussed in detail.

*5156 Industrial Hydraulics	180	8
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Multiple valve packs of open and closed center systems will be studied in class as well as laboratory. Relief and stroke control valve setting will be a part of this course. Preventive maintenance will be emphasized in relation to proper fluids and filters. Testing devices of the industry will be used for diagnosis and setting to Technical Manual specifications. Applied geometry is also included. Prerequisite: 5125

5164 Farm Machinery II	180	8
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This course deals with the planting, harvesting, processing and handling machines of our industry. Selection, operation, adjustment and preventive maintenance of these machines will be studied. Factors of machine capacity will be emphasized. Also includes a study of mechanics.

*5165 Industrial Transmissions	180	8
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Concepts of the high torque-low speed characteristics of this transmission will be studied in conjunction with the torque converter and lock-out clutch for high speed-lower torque application. Laboratory work will include the set-up of preload and end play of input and output shafts and cluster gears. The Technical Manual of the transmission will be followed. General mechanics is also included.

5166 Sales and Marketing	60	5
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An introductory course in modern salesmanship techniques and procedures. It analyzes marketing and product services as they depend on the student's ability to use principles of salesmanship, verbal persuasion and sensitivity in person-to-person relationships.

5167 Psychology	60	3
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This course involves the foundations of practical psychology in respect to business environment and efficiency as related to getting things done. Improving reading, word power and seeing the other side of the business will be studied. Remembering more, longer; learning and advancing on the job; organizing your work and making the best use of your resources are interesting highlights of this course. Prerequisite: 5152

5190 Introduction to Welding	60	3
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This course is an introduction to the setup and use of gas welders for use in heating, cutting, tempering, welding, brazing and soldering and the arc welder for cutting and welding. Safety hazards and safe practices in gas and arc welding are emphasized.

5191 Farm Shop	60	3
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This course will provide basic gas and electric welding and the use of the many special tools needed to diagnose and test farm equipment. Basic concrete, 120-240 volt circuitry found in

COURSE DESCRIPTIONS**Hours Credits**

shops, woodworking required in maintenance of field machinery, soldering, painting and glazing, and basic plumbing required within the shop area as well as the equipment to be repaired will be covered in this course.

5192 Vehicular Air Conditioning**60 3**

A study of the cooling systems found in tractor, combine and pick-up truck cabs common to our field. Work will include the

COURSE DESCRIPTIONS**Hours Credits**

operation and maintenance of these units with troubleshooting for proper diagnosis a prime objective.

5193 Basic Machining**60 3**

A basic course in lathe, mill, band saw, thread die and micrometer use and application to the field of agricultural equipment.

APPLIED FIRE SCIENCE TECHNOLOGY

Modern fire fighting techniques require an intelligent, courageous, and dedicated fire fighter. To keep pace with the rapid technical changes and to cope with public service problems, a highly skilled fire fighter who is thoroughly prepared in fire science is necessary. The need for job upgrading to keep abreast of the technical standards of fire fighting is apparent in community fire departments. This program is offered to help meet community needs for a high degree of fire service.

The Applied Fire Science program emphasizes the mastery of the appropriate subject skills and the acquisition of technical and general information necessary in the development of mature and knowledgeable judgment in fire fighting methods and techniques as well as administration.

Employment opportunities for the graduates of this program, provided they can pass the required medical and physical tests, would be with a local fire department, an industrial plant having safety and fire prevention departments or in a fire underwriter's group.

APPLIED FIRE SCIENCE TECHNOLOGY

Associate Degree

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
5310 Introduction to Technical Communications	36	2
5311 Fundamentals of Mathematics	60	5
5312 Occupational Orientation	36	2
5313 Introduction to Fire Technology	60	4
5314 Fire Apparatus I	72	4
5320 Technical Communication Skills	36	2
5321 Human Relations	36	3
5322 Electricity	72	4
5323 Fire Apparatus II	72	4
5324 Fire Department Hydraulics	72	4
5330 Oral Communications	24	2
5331 Fire Alarm and Communications System	36	2
5332 Fire Fighting Strategy and Tactics	72	4
5333 Fire Protection Equipment and Systems	36	2
5340 Chemistry I	60	4
5341 Psychology	36	3
5342 Hazardous Materials I	48	3
5343 Rescue Practices and Procedures	72	4
5350 Chemistry II	60	4
5351 Industrial Safety and Fire Control	36	3
5352 Hazardous Materials II	60	4
5353 Fire Investigations	48	3
5360 Technical Reporting	36	3
5361 Fire Service Organization and Management	36	3
5362 Fire Department Specifications	72	4
5363 Fire Prevention and Inspection	36	2
5364 Legal Problems in Fire Service	36	3
Electives to total	144	12

Total Contact Hours: 1,500
Total Credits: 99

	Hours	Credits
Electives:		
5391 Techniques of Supervision I	36	3
5392 Mechanical and Electrical Equipment	36	3
5393 Building Materials	36	3
5394 Aircraft Fire Protection and Rescue Procedures	122	8
5395 Typewriting I	36	3

COURSE DESCRIPTIONS

	Hours	Credits
5310 Introduction To Technical Communications	36	2

After individual testing to determine specific language needs, this course provides for extensive training in general writing, listening, reading and speaking. Emphasis is placed on the use of logic in the development of written and oral ideas.

5311 Fundamentals of Mathematics	60	5
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This course is a combination of Fundamental Arithmetic and Fundamentals of Algebra.

5312 Occupational Orientation	36	2
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Career pursuits are investigated in the general area of study of the student's interests and enrollment and include interviews, study of occupational information and its sources, testing, exploration of job opportunities and research of specific jobs and fields.

5313 Introduction to Fire Technology	60	4
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An introductory course reviewing the fire problems and broadly touching various phases of the fire technology field, includes characteristics and behavior of fire, hazardous properties of materials. The NFPA *Fire Protection Handbook* is used as this text.

5314 Fire Apparatus I	72	4
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This course to include driving techniques, construction and operation of pumping engines.

5320 Technical Communication Skills	36	2
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Intensive training in clear, effective writing and other forms of communication is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Prerequisite: 5310

5321 Human Relations	36	3
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In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society.

5322 Electricity	72	4
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This course is a study of the basic concepts required of the electrical worker. Particular emphasis is placed on the concept of

COURSE DESCRIPTIONS

series circuits, parallel circuits, series parallel combination circuits and Ohm's Law. The basic definition of electromotive force, current and resistance receive special attention.

5323 Fire Apparatus II 72 4

This course includes construction and operation of aerial ladders, aerial platforms, specialized equipment and maintenance. The IFSTA *Manual 106* will be used as the text.

5324 Fire Department Hydraulics 72 4

Review of basic mathematics; hydraulic laws and formulas as applied to the fire service.

5330 Oral Communications 24 2

Through intensive training in informative, persuasive and special purposes presentation, speech skills are developed.

5331 Fire Alarm and Communications Systems 36 2

Fundamentals of municipal and local alarm systems, heat, smoke, flame detectors, telephone, teletype and radio systems. Prerequisite: 5322

5332 Fire Fighting Strategy and Tactics 72 4

Pre-plan for fires, combined operations, mutual aid, disaster planning and problems in unusual fire operations.

5333 Fire Protection Equipment and Systems 36 2

Portable fire extinguishing equipment; sprinkler systems; protective alarm and detection systems. Prerequisite: 5322

5340 Chemistry I 60 4

An introductory study of chemical operations, the atom, the elements, molecules, chemical bonding and properties of matter is made.

5341 Psychology 36 3

This course presents a study of psychological behavior and research within employer-employee relationships. Information concerning human needs and behavior in business and industry is designed to improve individual attitudes, productivity and personal morale in working situations.

5342 Hazardous Materials I 48 3

A review of the basic chemistry, storage, handling laws, standards and fire fighting practices pertaining to hazardous materials.

5343 Rescue Practices and Procedures 72 4

Rescue practices, the human body, emergency care of victims, childbirth, artificial respiration. This course also includes procedures on aircraft rescue and fire fighting, and the fire department's responsibilities in protection of evidence at the scene of an aircraft incident.

5350 Chemistry II 60 4

A study of the principles of theory of chemistry including solutions, acids and bases, chemical kinetics and equilibrium and an introduction to organic chemistry, biochemistry and industrial chemistry is made.

5351 Industrial Safety and Fire Control 36 3

This course covers considerations of managerial and supervisory responsibility for fire and accident prevention, covers the investigation of accidents, preparation of accident reports, machine guarding, the use of personnel protective equipment, conformity to state industrial accident code and fire regulations, provision for first aid, the use of safety committees, and the methods of developing, advertising and promoting a good safety and fire prevention program.

COURSE DESCRIPTIONS

5352 Hazardous Materials II 60 4

Continuation of the study of hazardous materials.

5353 Fire Investigations 48 3

Introduction to arson and incendiary, arson law.

5360 Technical Reporting 36 3

Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

5361 Fire Service Organization and Management 36 3

Consideration of basic concepts and principles of administration applicable to the organization and administration of efficient fire departments.

5362 Fire Department Specifications 72 4

Preparation of specifications for apparatus, hose and minor equipment, and fire station specifications.

5363 Fire Prevention and Inspection 36 2

Organization and function of the fire prevention organization; inspections surveying and mapping procedures.

5364 Legal Problems in the Fire Service 36 3

Laws governing the organization and operation of fire departments, liability, mutual aid, arson, fire prevention, building construction, etc.

5391 Techniques of Supervision I 36 3

The course covers management development. The material is directed toward the responsibilities of any supervisor; including responsibilities of the supervisor functioning within an organizational structure. It relates to communications, motivation, delegation of authority, interviews, orienting and inducing new employees, and evaluation of employee performance.

5392 Mechanical and Electrical Equipment 36 3

Students study the mechanical and electrical systems in a structure. Plumbing, heating and cooling and electrical systems will be studied. Mechanical and electrical drawings will be studied. Prerequisite: 5322

5393 Building Materials 36 3

This course covers the basic architectural and structural construction materials and their applications. Building materials will be considered for usability and cost feasibility.

5394 Aircraft Fire Protection and Rescue Procedures 122 8

This course includes both the theory and practice in the operation of airport fire equipment and the use of water fog lines, both high-pressure and low velocity fog applications, use of special agents, and the various methods of application of agents. Special emphasis is placed on rescue methods and equipment, as well as the unique fire hazards of aircraft and their cargo.

5395 Typewriting I 36 3

A course for beginners in typewriting. It covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care, and speed development.

AUTOMOTIVE BODY REPAIR TECHNOLOGY

The field of automotive body repair and painting requires a large number of well-trained people to meet the growing demand for the many skills needed in this area of employment.

A skilled auto body technician needs a high level of manipulative ability to repair the damaged parts of an automobile to original condition. The job requires a high degree of physical dexterity in order to work with thin sheet metal panels and intricately shaped panels.

The areas of instruction include shrinking and stretching methods, alignment of body, hoods, deck lids, wheel alignment, and matching of paints. All of these lead to restoration of the complete automotive body to its original contour and finish. An area which receives much emphasis is gas welding, which in turn makes it possible to repair and restore the automotive body and frame.

Additional emphasis is placed on the increasingly important skills in fiber glass and plastic repair, as well as interior refinishing.

Many opportunities are available for the graduates who develop a high degree of skill, which may enable them to establish a business of their own or to obtain employment in an automotive dealership or automotive body establishment. This program leads to a technical certificate in Automotive Body Repair.

AUTOMOTIVE BODY REPAIR TECHNOLOGY *Technical Certificate*

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Prerequisites are identified in the course descriptions)

	Hours	Credits
5610 Basic Auto Body Repair	216	7
5611 Basic Welding	144	6
5620 Automotive Body Welding	156	5
5621 Body and Chassis Alignment	132	6
5622 General Automotive Mechanics	72	4
5630 Collision Damage Repair	180	7
5631 Automotive Paint Shop Practices	180	6
5640 Automotive Body Shop Practices	168	6
5641 Fiberglass and Plastic Repairs	144	6
5642 Human Relations	48	4

Total Contact Hours: 1,440
Total Credits: 57

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the auto body repair industry.

5610 Basic Auto Body Repair 216 7

An introduction to automotive body repair and refinishing. The construction of the auto body, minor dent damage repair and refinishing, hand and portable power tools and safety are emphasized. Applied mathematics and communications skills are also included.

5611 Basic Welding 144 6

This course is an introduction to the setup and use of gas welders for use in heating, cutting, tempering, welding, brazing and soldering and the arc welder for cutting and welding. Safety hazards and safe practices in gas and arc welding are emphasized.

5620 Automotive Body Welding 156 5

The application of basic welding techniques in the replacement and repair of panels is covered. Techniques peculiar to automotive body repair are also covered. Prerequisite: 5611

5621 Body and Chassis Alignment 132 6

This course covers the alignment of body panels for proper fit. It also covers the measurement of chassis alignment in the areas of the front suspension, rear axle and frame and the correction of misalignments. Applied mathematics and communications skills are also included.

5622 General Automotive Mechanics 72 4

A general study of the major components of the modern automobile. Particular emphasis is placed on power trains, steering systems, cooling systems, exhaust systems, fuel systems and chassis safety devices.

5630 Collision Damage Repair 180 7

Repair of extensive automotive body damage is covered. The replacement of major body panels is also taught. An introduction to frame straightening is covered. Also covered is a knowledge of basic electricity and automotive wiring systems. Learn proper procedures and precautions for replacing electrical components. Applied mathematics and communications skills are also included. Prerequisites: 5620, 5621

5631 Automotive Paint Shop Practices 180 6

Develop skills of auto body repair in the areas of wet sanding, color mixing, blending, spraying and template layout. Speed and skill are developed in the automotive refinishing processes. Special techniques and problems encountered in automotive refinishing are emphasized.

5640 Automotive Body Shop Practices 168 6

Speed and skill are developed in the repair of minor collision damage. Special techniques used in the body shop are emphasized.

COURSE DESCRIPTIONS

HoursCredits

sized. Stress is placed on the ability to visually estimate the cost of repair to a damaged vehicle. Emphasis placed on the use of estimating guides, procedures for itemizing damage, interpreting abbreviations, part numbers, and conversion tables for time and money. Applied mathematics and communications skills are also included. Prerequisite: 5610, 5611

5641Fiberglass and Plastic Repairs1446

Basic techniques of automobile interior refinishing, along with a study of spring construction, fillings and fabrics. Developing the manipulative skills necessary through the practice of various

COURSE DESCRIPTIONS

HoursCredits

projects on seats, panels and arm rests. Special emphasis is placed on the repair and finishing of exterior fiberglass panels and components.

5642Human Relations484

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

AUTOMOTIVE SERVICE TECHNOLOGY

The automotive service technician is a highly skilled, well-paid, respected worker whose services are always in demand and who is extremely important to the national economy. As a result of society's great dependence on automobiles for transportation and because today's cars are highly developed, automobiles must be serviced regularly.

The student is given thorough preparation in every aspect of automotive maintenance and repair, including wheel alignment and balance, carburetion, ignition, tune-up procedures, brakes, and front suspension. The student learns about all types of current internal combustion engines and vehicular equipment, including air conditioning, automatic transmissions, and the recently developed emission control and safety systems.

Special emphasis is placed on the increasing use of solid-state electronics and electrical controls in many of the systems of the modern automobile.

Vehicle mechanics make up the largest service and repair group in the United States. Wages are good and opportunities are excellent for the person who is anxious to learn and willing to work.

For many graduates, a job as an auto service technician becomes a stepping stone to greater responsibility such as service manager. Good mechanics who are well grounded in business practices may own their own shop and have other mechanics work for them.

AUTOMOTIVE SERVICE TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
5812 Chassis and Suspension Systems	84	4
5813 Braking Systems	96	5
5814 Front End Alignment	96	5
5815 Basic Mathematics and Geometry	36	3
5822 Automotive Engines I	84	4
5823 Basic Electrical & Ignition Systems & Tune-Up	96	5
5824 Fuel and Carburetion Systems and Tune-Up	96	5
5825 Technical Mathematics I	36	3
5833 Automotive Electrical Systems	84	4
5834 Automotive Engines II	96	4

	Hours	Credits
5835 Automotive Power Trains I	60	4
5836 Basic Welding and Brazing	72	3
5843 Automotive Power Trains II	96	5
5844 Automotive Air Conditioning	84	4
5845 Advanced Tune-Up	96	5
5846 Vehicle Inspection & Safety	36	2
5854 Automatic Transmission Service	84	4
5855 Automatic Transmission Diagnosis & Repair	96	4
5856 Automotive Accessories & Electronics	84	4
5857 Technical Communications	48	4
5863 Comprehensive Diagnostic Procedures	96	4
5864 Automotive Parts Handling	60	3
5865 Service Organization and Management	84	4
5866 Human Relations	36	3
5867 Technical Mathematics II	36	3
5873 Industrial Economics	60	5
5874 Physics for Technicians	60	4
5875 Practicum in Automotive Service	180(min.)	3

Total Contact Hours: 2,172
Total Credits: 110

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the automotive industry.

5812 Chassis and Suspension Systems 84 4

This course covers the various frame designs used in the construction of an automobile, including the suspension components. The student gains experience in the repair and service of suspension components such as ball joints, idler arms, tie rod ends, etc. Exhaust systems and shocks will be covered, with special emphasis on catalytic converter service.

5813 Braking Systems 96 5

An in-depth study of automotive braking systems, includes hydraulic theory with special emphasis on service and repair of all brake components, such as booster units, master cylinder, wheel cylinder, caliper rebuilds, and drum and rotor service.

5814 Front End Alignment 96 5

A thorough study of the fundamentals of wheel alignment and wheel balance. Each of the five wheel alignment angles, steering wheel positioning, vehicle tracking, and wheel balancing principles will be covered in detail. Co-requisite: 5812

COURSE DESCRIPTIONS

Hours Credits

5515 Basic Mathematics and Geometry 36 3

This is a basic math course for mechanics. Topics include: decimal fractions, common fractions, percents, ratios, and proportions; measuring — including the metric system; squares and square roots of numbers, signed numbers, algebraic notation; adding, subtracting, multiplying and dividing algebraic expressions; solving simple linear equations, plane figures, and solid figures. Special emphasis is placed on geometry in support of the study of front end alignment.

5522 Automotive Engines I 54 4

This course is designed to familiarize the student with the theory, construction, and design of the internal combustion engine. Non-reciprocating automotive engines are also introduced. Also includes a thorough study of typical shop tools and equipment with emphasis on S. A. E. and metric measurements and standards. Emphasis is placed in the upper portion of the engine with respect to valve and head service.

5523 Basic Electrical and Ignition Systems & Tune-Up 96 5

An introduction to basic electrical theory and circuits with emphasis on the construction, function, and principles of operation of the battery, and components of the conventional and transistorized ignition system. Emphasis is placed on developing a general understanding of these electrical components and the techniques for diagnosis, correction, and tune-up of ignition systems. Emphasis is also placed on the role of the ignition system in emission control.

5524 Fuel and Carburetion Systems & Tune-Up 96 5

An intensive study of automotive fuels and carburetion systems such as single, double, and four-barrel carburetor, carburetor circuits, and an introduction to fuel injection systems. Students will learn emission control as it applies to the fuel system. Emphasis is on the shop procedures necessary in determining the nature of troubles developed in the fuel and emission systems of the automobile causing air pollutants. There is also trouble-shooting of the fuel and emission systems, providing a full range of testing, adjusting, tune-up, and replacing experiences.

5525 Technical Mathematics I 36 3

A continuation of algebra with emphasis on scientific notation, powers, and roots. Also includes analytic geometry and trigonometry.

5533 Automotive Electrical Systems 84 4

An intensive study of the construction, function, and principles of operation of the electrical units of the automobile, including: batteries, starting motors, generators, alternators, charging systems, regulators, interlock systems, dash instruments, and lighting systems. Emphasis is placed on developing a comprehensive understanding of all electrical components and systems with special emphasis on the diagnosis, testing, and repair of these systems. Prerequisite: 5823

5534 Automotive Engines II 96 4

This course is designed to familiarize students with the tools, machines, and equipment needed for the rebuilding and tune-up of the automotive internal combustion engine. Emphasis is placed on diagnosing problems and utilizing proper equipment in laboratory for tune-up and repair.

5835 Automotive Power Trains I 60 4

The theory, operation, repair, and troubleshooting of the power train of vehicles as it leaves the engine and is delivered at the wheels is studied. Emphasis is placed on the operation and maintenance of clutches and manual transmissions.

COURSE DESCRIPTIONS

Hours Credits

5836 Basic Welding and Brazing 72 3

This course is an introduction to the area of Arc and Ox-yacetylene welding and cutting. The fundamental principles of joining ferrous metals are studied and demonstrated. Basic welding processes, equipment operation, and safety procedures are practiced in laboratory work.

5843 Automotive Power Trains II 96 5

A continuation of the study of the power train as it leaves the engine and is delivered at the wheels; with emphasis on universal joints, differentials, and rear axle assemblies, including the use of barrel gauges. Checking, disassembly, and replacement of bearings and wheel assemblies are also included. Emphasis is placed on an understanding of the various types of lubricants and their application to the modern automobile.

5844 Automotive Air Conditioning 84 4

An intensive study of automotive air conditioning, including both heating and cooling. Special emphasis is placed on the operation and trouble-shooting of the air conditioning refrigeration system and its components. Vacuum and electrical control systems are also included.

5845 Advanced Tune-Up 96 5

An advanced course to familiarize students with the importance and necessity of troubleshooting and pin-point diagnostic procedures. Special emphasis is placed on the operational principles of the automotive engine, and the components that support good performance are studied. The laboratory is used for diagnosis and evaluation. Prerequisites: 5823, 5824

5846 Vehicle Inspection and Safety 36 2

A study of the various federal and state regulations concerning automotive safety devices and their proper operations. Special emphasis is placed on the techniques of overall vehicle inspection to determine compliance with existing federal and state laws. Also includes a study of the nature of air pollution, federal standards, and industry achievements in reducing emissions.

5854 Automatic Transmission Service 84 4

A lecture-laboratory course in automatic transmissions which include construction, function, and principles of operation. The laboratory exercises will be conducted with respect to in-the-car service such as oil and filter changes, band adjustments, and troubleshooting. Emphasis is placed on power flow within the transmission and operational diagnosis. Prerequisite: 5835

5855 Automatic Transmission Diagnosis & Repair 96 4

Understanding of automotive automatic transmission service with respect to out-of-the-car service. Components such as planetary gears, clutches, controls, and valve bodies will be studied. Theory and practical work include diagnosis, correction, and testing of malfunctions on dead and live transmissions and their components. Co-requisite: 5854

5856 Automotive Accessories & Electronics 84 4

Basic study of the function, construction, principles of operation, and troubleshooting techniques for the varied accessories of automotive vehicles, to include windshields washers and wipers, power seats, power windows, adjustable steering wheels, power tailgates, headlight enclosures, speedometers, etc. Specific automotive applications include: installation of radios, antennas, speaker systems, and transistor ignition systems; operation and maintenance of lighting and signalling systems, headlight dimmers, electrically operated safety devices, buzzers, flashers, and electric motor operated devices. Prerequisite: 5833

COURSE DESCRIPTIONS**Hours Credits****5557 Technical Communications****48 4**

Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise written and oral presentation of technical materials. Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner.

5563 Comprehensive Diagnostic Procedures**96 4**

An advanced course to familiarize students with the importance and necessity of troubleshooting and pin-point diagnostic procedures. It is designed to pull together previously studied courses. The laboratory is used for diagnosis and evaluation. The principle objective being the complete tune-up of the automotive system as closely as possible back to its original new condition according to manufacturers' recommendation and specifications. Prerequisite: 5845

5864 Automotive Parts Handling**60 3**

This is a study of the principles, practices, and procedures in efficient and profitable operation of parts departments. Special emphasis is placed on understanding and interpreting manufacturers' catalogs and component reference numbering systems, as well as the techniques for installing and maintaining a practical inventory control system for automotive parts.

5865 Service Organization and Management**54 4**

A study of the methods of work and time scheduling in the service shop and the techniques of obtaining maximum work efficiency from a group of mechanics and specialists. The general principles of service station sales, service, and customer relations are also included.

COURSE DESCRIPTIONS**Hours Credits****5866 Human Relations****36 3**

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity, and morale in working situations.

5867 Technical Mathematics II**36 3**

This course is a continuation of Technical Mathematics I beginning with a review of linear equations and factoring, advancing to exponents and radicals, quadratic equations, graphs of equations and logarithms.

5873 Industrial Economics**60 5**

A course covering fundamental economics and basic principles of business systems. Everyday terminology is used, and emphasis is placed on practical economics as opposed to the theoretical. Subjects covered include various types of business organization, costs and pricing, competition, money systems, taxes, productivity and automation.

5874 Physics for Technicians**60 4**

A course in general physical science with emphasis on mechanics and the use of cams, gears, bearings, pawl and ratchets, linkages and drive trains producing rotary, reciprocating or oscillating motion. Also studied are the various systems of measurement, the behavior of molecules, force and motion, power and energy, simple and compound machines, fluid power, and heat and thermometry.

5875 Practicum in Automotive Service**180(min.) 3**

Cooperative supervised experience in industry designed to enrich the student through observation and participation in current practices. Students will return to the classroom on a periodic basis for supplementary instruction and progress evaluation.

BUILDING CONSTRUCTION TECHNOLOGY

This program deals with light construction, with particular emphasis on practical experience in residential work. It is especially designed for those who desire to enter the small builders field as contractors or jobbers, after gaining some practical experience.

Skill is developed in wood, concrete and masonry construction. This includes the proper use of tools and woodworking machinery, house framing, use of steel square, millwork, stair building and the hanging of sash and doors. Reinforced concrete construction, form building, foundations, bricklaying, flooring, and roof flashing are also covered in a practical manner. Basic plumbing, heating and electrical wiring are included.

Special emphasis is placed on such related skills as blueprint reading, basic architectural drawing, surveying and estimating. Modular production techniques are also introduced.

BUILDING CONSTRUCTION TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
6010 Fundamentals of Carpentry	144	7
6011 Fundamentals of Plumbing	96	4
6012 Blueprint Reading I	60	5
6020 Rough Framing and Exterior Finishing	180	8
6021 Blueprint Reading II	60	4
6022 Electrical Wiring Fundamentals	60	4
6030 Interior Trim and Finishing	120	6
6031 Fundamentals of Concrete and Masonry	120	6
6032 Technical Communications	60	5
6040 Sheet Metal and Steel Construction	120	6
6041 Architectural Drawing	120	6
6042 Surveying and Measurements	60	4
6050 Mechanical and Electrical Installation	120	6
6051 Estimating and Specifications	120	6
6052 Basic Welding Fundamentals	60	3
6060 Modular Production Techniques	120	6
6061 Construction Business Principles	120	6
6062 Human Relations	60	4

Total Contact Hours: 1,800
Total Credits: 96

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the building construction industry.

6010 Fundamentals of Carpentry 144 7

This course covers a brief history of carpentry and present trends of the construction industry. Operation, care and use of carpenters hand tools and power tools in cutting, shaping, and joining construction materials used by the carpenter is emphasized.

6011 Fundamentals of Plumbing 96 4

This course is designed to introduce students to a brief history of plumbing, the tools, fittings and small equipment used by plumbers and the methods and techniques of properly mating plumbing materials including operations such as threading, cutting, caulking, and sweating the varied types of pipe and tubing used in plumbing. Applied mathematics and communications skills are also included.

6012 Blueprint Reading I 60 5

Instruction and practice in the study of working drawings and application of understandings from the "print" to the "work." Typical units will include the relationship of views and details, interpretation of dimensions, transposing scale, tolerances, electrical symbols, sections, material symbols, material lists, architectural plates, room schedules and plot plans.

6020 Rough Framing and Exterior Finishing 180 8

Instruction is given in the principles and practices of frame construction, including foundation sites, floor joists, studs, rafters, plates, bridging, bracing, sheathing, sub-flooring and interior wall partitions. Roof construction is covered, including layout and construction methods of common types of roofs using standard rafter construction, truss construction, and post and beam construction. Application and selection of sheathing and roofing is included. Applied mathematics and communications skills are also included. Prerequisite: 6010

6021 Blueprint Reading II 60 4

This course is designed to develop proficiencies in the interpretation of more complex blueprints including notations, conventional symbols and dimensions. Special emphasis is placed on developing basic mechanical drafting skills. Also includes an understanding of building codes and their interpretation.

6022 Electrical Wiring Fundamentals 60 4

This course covers basic electrical theory, electrical codes and symbols, installation of electrical service, metering equipment, lighting, switches, outlets, heating control systems, remote controls and other electrical components common to residential wiring, installation and maintenance.

COURSE DESCRIPTIONS**Hours Credits****6030 Interior Trim and Finishing****120 6**

This course covers interior trim, including door and window trim and facing. Interior flooring, molding, cornice construction, installation of hardware, installation of built-in equipment and cabinets. The installation of and maintenance of hot and cold water distribution systems, heating device systems, private and public sewage and drainage systems and ventilation for single and multilevel dwellings will be covered. Also covers the technique of mill work and the selection and grading of lumber. Prerequisite: 6010

6031 Fundamentals of Concrete and Masonry**120 6**

This course covers materials and methods of construction, building layout, preparation of building site, footings and foundations, wall construction, to include form construction and erection. Special emphasis is placed on the study of basic tools and materials used in the masonry field, physical properties of brick, structural tile, concrete block. Solid brick walls, corners, isolated piers and plasters will be constructed. Construction of masonry walls including corners for English, Flemish, and Dutch bonds. Applied mathematics and communications skills are also included.

6032 Technical Communications**60 5**

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

6040 Sheet Metal and Steel in Construction**120 6**

The student is given basic structural steel design problems after he has been exposed to the theories, terminology and codes applicable to the problem. Practice in detailing structural steel, and information concerning fabrication and erection of structural steel are covered. Special emphasis is placed on aluminum siding and other aluminum panels used in building construction. Geometry and algebra are integrated into the subject areas on an applied basis.

6041 Architectural Drawing**120 6**

This course covers the uses of drafting equipment, free hand lettering, shape description and free hand sketching. The importance of complete and accurate drawings is stressed. Special emphasis is placed on the basic fundamentals of architectural drawing as the use of standard practices in sectioning, detailing, lettering, dimensioning, symbols, plan work and elevations. Prerequisite: 6021

6042 Surveying and Measurements**60 4**

Instruction in the use of the instruments used in the field of construction surveying such as the transit, level, and chains. Their use and application in the solving of typical field problems is studied and the field work and office computations required in the solution of level nets and transverses.

6050 Mechanical and Electrical Installation**120 6**

The operation of mechanical equipment in the air condi-

COURSE DESCRIPTIONS**Hours Credits**

tioning field, and installation of systems using this equipment, installation of complete air conditioning systems, including, heating, cooling, humidification and air cleaning are studied. Heat losses and heat gains are discussed in order to familiarize the student with accepted practices used in selecting air conditioning equipment. Various types of automatic fuel burning devices as well as comparable fuel heating costs are also studied. Consideration is given to the coordination of carpentry work with installation of mechanical equipment such as: electrical, air conditioning, heating and plumbing. Prerequisites: 6011, 6022

6051 Estimating and Specifications**120 6**

A study of building plans and specifications, how to make take-offs and compile quantity surveys, study of current pay wages in the building field are covered as well as the comparison of cost of building materials and labor involved in erecting such materials. The course also includes a study of the various materials used in construction, their sources, methods of delivery, techniques of storage and inventory control. Designed to coordinate the various procedures covered in the building construction courses in carpentry, masonry, electrical and heating, the course will also enable the student to coordinate the work of the various trades. Various construction equipment and their operation are also studied. Prerequisite: 6021

6052 Basic Welding Fundamentals**60 3**

This course is an introduction to the setup and use of gas welders for use in heating, cutting, tempering, welding, brazing and soldering and the arc welder for cutting and welding. Safety hazards and safe practices in gas and arc welding are emphasized.

6060 Modular Production Techniques**120 6**

An intensive study of pre-fabricated and pre-cut building techniques is made with special emphasis on production line assembly of complete building assemblies, particularly as applied to mobile homes and recreation vehicles. The course also includes a study of strength of materials and materials selection technique.

6061 Construction Business Principles**120 6**

This course stresses the fundamental business operations and their application to construction problems. Topics covered are percentage, discounts, markup, interest, installment purchases, depreciation, investments, payroll, etc. The various types of working agreements, offers to purchase, contracts, and specifications are analyzed and their functions illustrated. Specifications covering various materials and methods of construction are studied. Special emphasis is placed on the O.S.H.A. regulations as they apply to the building industry.

6062 Human Relations**60 4**

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

"To some degree the regulatory instability of the cable industry during the past ten years will tend to explain why so little consideration has been given to its technical and engineering manpower requirements. In the very early days unemployed telephone company and broadcasting technicians were able to enter the industry with no previous experience or training. Frequently if one survived a week's employment he became an expert in cable technology, and he was, in fact, for he frequently knew more about the industry than those who lacked the week's experience."

— from the Office of Telecommunications,
U.S. Department of Commerce Study,
Cable Television Industry's Manpower
Requirement Survey, November, 1972.

This program is designed to help fill this void within the CATV industry. A recent industry survey indicated that between 1972 and 1977, 35,000 new jobs would open up for cable technicians.

The cable technician's work involves diagnosing trouble in the equipment and making the necessary repairs and adjustments. The technician checks and evaluates each possible cause of trouble, conducts routine checks, and uses electronic testing equipment to check suspected circuits.

The CATV industry manpower needs range from an installer to a chief technician. In addition, companies who manufacture cable TV equipment are in need of people specifically trained in the cable TV field.

CABLE TELEVISION TECHNOLOGY

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Prerequisites are identified in the course descriptions)

	Hours	Credits
6610 Introduction to Electricity	96	5
6611 Basic CATV	96	5
6612 Basic Physical Science	60	4
6613 Introduction to Public Relations	36	3
6620 System Construction	96	5
6621 Basic Residential Construction	60	4
6622 Cable Methods and Splicing	96	5
6623 Human Relations	36	3
6630 Mechanics of System Design	60	4
6631 Electronics for CATV	96	5

CABLE TELEVISION TECHNOLOGY

		Hours	Credits
6632	Troubleshooting Fundamentals	96	5
6633	Safety Techniques	36	3
6640	CATV Troubleshooting Techniques	96	5
6641	Head-end Operations	60	4
6642	Field Project	40	2
6643	Professional Cable Practices	60	5
6644	Technical Mathematics	36	3

Total Contact Hours: 1,156
Total Credits: 70

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills Advancement provides individualized, self-paced instruction tailored to each student's individual needs. The emphasis of the subject material is on communications, shop processes, and mathematics skills with supplementary material oriented toward the electronics industry.

The total amount of credit granted is based on the number of specific objectives the student has met. Degree-Credit can be granted when a student has exceeded the minimum entry requirements for this program.

6610 Introduction to Electricity 96 5

A study of the relationship between voltage, current, and resistance in electrical circuits. Emphasis is placed on cable electrical requirements.

6611 Basic CATV 96 5

An introduction to the philosophy behind CATV. Items to be covered include the history of cable and wired communications, and how they effect society. Also includes an introduction to the basic components of CATV systems and their theory of operation. Co-requisite: 6610

6612 Basic Physical Science 60 4

A study of properties of matter and mechanics; includes the concepts of force, motion, work, energy and power, analysis of basic machines, mechanical advantages, efficiency and transmission of power.

6613 Introduction to Public Relations 36 3

In this course, special emphasis is placed on studies concerning human needs and behavior in business and industry, and is designed to improve individual attitudes, productivity, and morale in working situations.

6620 System Construction 96 5

This course will involve a general overview of a CATV system. Included are trunks, distribution trunks, and subscriber drops. Also covered are basic system parameters. Prerequisites: 6610, 6611

6621 Basic Residential Construction 60 4

In this course the student will be introduced to some of the hardware used in Residential Construction. Items to be covered include active and passive devices, and support and entrance equipment. Prerequisite: 6610

COURSE DESCRIPTIONS	Hours	Credits
6622 Cable Methods & Splicing	96	5

This course will introduce the student to cable splicing techniques. Also covered will be characteristic impedance, alternating return loss, and cable types. Prerequisites: 6610, 6611

6623 Human Relations	36	3
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In this course the student develops effective skills necessary for understanding human motivation and behavior.

6630 Mechanics of System Design	60	4
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This course is concerned with the typical parameters used in system design. Items to be covered include: active and passive devices, alternation, PAM modulation, tilt, powering, S/N, and cross modulation. Prerequisite: 6620

6631 Electronics for CATV	96	5
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This course will give the student a general understanding of how CATV active devices work. Included are: electronic signal circuits, transmitters and receivers, tubes, transistors, power supplies, and auxiliary circuits. Prerequisites: 6610, 6611

6632 Troubleshooting Fundamentals	96	5
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The techniques of logical troubleshooting of electronic circuits and simple systems will be studied. Emphasis will be placed on signal tracing and signal injection methods. Prerequisite: 6610. Co-requisite: 6631

6633 Safety Techniques		
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Items to be covered include safe climbing, gaffs and belts, working around electricity, first aid, and shock.

COURSE DESCRIPTIONS	Hours	Credits
6640 CATV Troubleshooting Techniques	96	5

A continuation of Troubleshooting Fundamentals. This course expands to include the techniques needed to troubleshoot CATV systems. Included are: input levels, tilt, ACC action, flat loss, etc. Prerequisite: 6632

6641 Head-end Operations	60	4
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This course will involve the student with head-end design and layout. Also covered will be: antenna design, maintenance, alignment, beats and interference. Prerequisite: 6631

6642 Field Project	40	2
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In this course the student will be introduced to actual CATV operations. During this time the student will observe and evaluate the operation. Also by participating in the operation the student will be evaluated in an occupational environment. Prerequisites: 6620, 6630, and 6631. Co-requisite: 6643

6643 Professional Cable Practices	60	5
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This course will introduce the student to the ethics and standard practices within the CATV field. Items to be covered include: planning, controlling, organizing, hiring, training, and evaluating. Also covered will be filing and setting up preventive maintenance schedules. Prerequisites: 6611, 6613 and 6623

6644 Technical Math	36	3
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This course will introduce the student to some of the basic math functions needed in CATV. Items to be covered include: Trigonometry, Algebraic Notations, Ohms Law, and Graphic analysis.

Because of economy of operation and comparatively low maintenance costs, the application of diesel power to both stationary and mobile installations has made great progress. There is an increasing demand for diesel technicians with skills in testing, servicing, and maintaining this type of equipment. The operation of large truck depots, company-owned operation centers, and expansion of highway building with large earth-moving equipment have opened vast numbers of jobs for diesel mechanics.

The diesel mechanic diagnoses and corrects mechanical faults in vehicles; cars, trucks, buses, and in some communities, tractors, marine engines and other equipment.

The graduate of this program is able to determine the causes of faulty operation and to repair and replace defective parts to restore the vehicle to proper operating condition. He is able to identify, dismantle, adjust, repair, replace and reassemble the various parts of the engine.

The graduate will know how to care for and safely use the basic tools and testing equipment associated with diesel repair and also be able to follow specifications and instructional manuals and use shop manuals and other technical publications.

The program also includes basic welding techniques, fluid power fundamentals, and emission control systems.

DIESEL POWER TECHNOLOGY

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Prerequisites are identified in the course descriptions)

	Hours	Credits
6210 Basic Welding Techniques	120	6
6211 Basic Mechanics and Electricity	120	8
6220 Fundamentals of Diesel Engines	120	7
6221 Diesel Engine Electrical Systems	120	7
6230 Diesel Pumps and Fuel Systems	120	7
6231 Fluid Power Fundamentals	60	5
6232 Machine Shop Processes	60	4
6240 Diesel Engine Troubleshooting	120	7
6241 Stationary and Marine Applications	60	4
6242 Technical Communications	60	5
6250 Diesel Emission Control Systems	60	4
6251 Vehicular Applications	60	4

DIESEL POWER TECHNOLOGY

	Hours	Credits
6252 Service Organization and Management	60	5
6253 Human Relations	60	4
Total Contact Hours:	1,200	
Total Credits:		77

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the diesel power industry.

6210 Basic Welding Techniques 120 6

This course is an introduction to the setup and use of gas welders for use in heating, cutting, tempering, welding, brazing and soldering and the arc welder for cutting and welding. Safety hazards and safe practices in gas and arc welding are emphasized.

6211 Basic Mechanics and Electricity 120 8

A study of properties of matter and mechanics includes the concepts of force, motion, work, energy and power; analysis of basic machines, mechanical advantages, efficiency and transmission of power; the concepts of magnetism and electrostatics, basic electric circuits, sources and effects of electric current, electromagnetic induction, alternating currents, generators and motors and the production and distribution of electric power. Applied mathematics is also included.

6220 Fundamentals of Diesel Engines 120 7

This course covers 2 and 4-cycle diesel engines to include construction and principles of operation. Valves, sleeves, and gears are covered in detail. Laboratory work will cover rebuilding a diesel engine. Applied mathematics and communications skills are also included.

6221 Diesel Engine Electrical Systems 120 7

This course covers diesel ignition systems, starting systems, generators and alternators. Laboratory work covers work on diesel engines as relates to the respective systems. Applied mathematics and communications skills are also included. Prerequisite: 6211

6230 Diesel Pumps and Fuel Systems 120 7

This course covers diesel super and turbo chargers, governors, cooling systems and fuel injectors. Laboratory work covers work on diesel engines as relates to the respective systems. Applied mathematics and communications skills are also included.

6231 Fluid Power Fundamentals 60 5

This course covers fundamentals of fluid power including principles, functions, terminology and symbols of hydraulics and pneumatics. Special emphasis on the understanding of basic hydraulic principles and equipment. Development of hydraulics,

COURSE DESCRIPTIONS

Hours Credits

advantages and problems in hydraulics setups, physical properties of liquids. Principles of operation and the constructional features of hydraulic pumps, motors, and valves and the types and uses of seals, packing and tubing. Applications of hydraulic components in typical circuits and to industrial equipment.

6232 Machine Shop Processes 60 4

Benchwork, sawing, filing, layout, drilling, reaming, and care and use of basic tools and measuring instruments related to the diesel shop.

6240 Diesel Engine Troubleshooting 120 7

This course covers diagnosis and correction of malfunctions of domestic diesel engines and includes practice on live engines. Prerequisite: 6220

6241 Stationary and Marine Applications 60 4

A study of the special requirements and techniques used in operating diesel engines in stationary and marine applications. Special emphasis is placed on precise speed regulation, special breathing and cooling problems.

6242 Technical Communications 60 5

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

COURSE DESCRIPTIONS

Hours Credits

6250 Diesel Emission Control Systems 60 4

A study of the causes and composition of pollutants produced by the diesel engine, their effective control, and measurement.

6251 Vehicular Applications 60 4

A study of the special requirements and techniques used in operating diesel engines in large trucks, locomotives, and heavy equipment. Special emphasis is placed on starting methods, governors, special breathing and cooling problems, and methods of power transfer and coupling to accessories. Prerequisite: 6231

6252 Service Organization and Management 60 5

A study of the methods of work and time scheduling in the service shop and the techniques of obtaining maximum work efficiency from a group of mechanics and specialists. The basic fundamentals of parts handling will be covered. Emphasis is placed on use of parts catalogs and parts department procedures. Applied mathematics and communications skills are also included.

6253 Human Relations 60 4

In this course the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and personal morale in working situations.

ARCHITECTURAL DRAFTING TECHNOLOGY

The architectural industry is in need of increasing numbers of well-prepared technicians to translate ideas into graphic and written form for the various architectural services.

Architectural draftsmen perform many of the planning tasks necessary to communicate the architect's designs to the builder. Graduates will be competent draftsmen who will work directly with architects and other qualified technicians in the preparation of complete and accurate working drawings, details and specifications. The technicians will be well informed on the building industry in general, the operation of an architect's office, building codes, methods and materials of construction, and contract documents. Upon gaining sufficient experience they may be involved in estimating, field observation and many other facets of architectural practice.

Students in this program will work both individually, and in teams, to develop working drawings for a wide range of structures from small residences to commercial and industrial buildings. Mechanical and electrical equipment, site planning, and cost estimating are important elements of the complete specifications to be developed for each building.

ARCHITECTURAL DRAFTING TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
5410 Technical Drafting I	120	6
5411 Physical Science	60	4
5412 Technical Mathematics I	60	5
5420 Technical Drafting II	120	7
5421 Applied Geometry	60	5
5422 Construction Materials	60	4
5430 Architectural Design I (Residential)	180	8
5431 Applied Trigonometry	36	3
5432 Mechanical and Electrical Equipment	36	3
5440 Architectural Design II (Commercial)	120	6
5441 Specifications and Codes	60	5

THE DRAFTING TECHNOLOGIES

	Hours	Credits
5442 Technical Communications	60	5
5450 Architectural Design III (Institutional)	180	8
5451 Structural Design	36	3
5452 Estimating	24	2
5460 Architectural Design Team Project I	144	7
5461 Architectural Rendering	36	3
5462 Architectural Business Principles	60	5
5470 Architectural Design Team Project II	120	7
5471 Surveying and Measurements	60	4
5472 Human Relations	60	4
Total Contact Hours:		1,692
Total Credits:		104

INDUSTRIAL DRAFTING TECHNOLOGY

The products of the manufacturing industry range in complexity from a simple plastic toy to an intricate electronic computer and in size from miniature electronic components to gigantic nuclear powered aircraft carriers. Many of the processes carried out in this manufacturing must be designed which leads to the need for persons competent in industrial drafting.

Drafting technicians working in manufacturing and design areas produce the working drawings which are used by craftsmen to manufacture products. They do factory layout work, tool and mold design work, tooling layout work, scheduling, purchasing of raw materials, and sometimes are responsible for the complete fabrication of a particular product.

Opportunities for employment may be found with manufacturing firms, construction companies, public utilities, highway and public works departments, and local, state and federal governmental units.

INDUSTRIAL DRAFTING TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

		Hours	Credits
7510	Technical Drafting I	120	6
7511	Physical Science	60	4
7512	Technical Mathematics I	60	5
7520	Technical Drafting II	120	7
7521	Mechanisms and Machines	60	4
7522	Applied Geometry	60	5
7530	Technical Drafting III	144	7
7531	Manufacturing Processes and Systems	60	5
7532	Applied Trigonometry	36	3
7540	Jig and Fixture Design Drafting	180	8
7541	Technical Communications	60	5
7550	Total Design Drafting	180	8
7551	Human Relations	60	4
7560	Die Design Drafting	180	8
7561	Industrial Economics	60	4
7570	Numerical Control and Data Processing	120	7
7571	Manufacturing Planning and Estimating	60	4
7572	Design Problems	60	4
Total Contact Hours: 1,680			
Total Credits: 98			

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the drafting field.

5410 and 7510 Technical Drafting I 120 6

This course covers the uses of drafting equipment, free hand lettering, shape description and free hand sketching. The importance of complete and accurate drawings is stressed.

5411 and 7511 Physical Science 60 4

A study of properties of matter and mechanics includes the concept of force, motion, work, energy and power; analysis of basic machines, mechanical advantages, efficiency and transmission of power.

5412 and 7512 Technical Mathematics I 60 5

Algebra is studied including the operations with signed numbers, variables, first degree equations, special products, factoring and algebraic fractions. Slide rule techniques are emphasized throughout.

5420 and 7520 Technical Drafting II 120 7

An intermediate course involving symbolisms and conventions, fits and allowances and drafting standards. Auxiliary views, isometric sketching and working drawings are covered. Proper use of instruments, use of arm and track drafting machines, blue printing, geometric constructions with emphasis on appropriate line weights and general drafting skill, multiview drawing, sketching, dimensioning, layout, introduction to vector construction and proceeding to simple working drawings.

COURSE DESCRIPTIONS

Hours Credits

5421 and 7522 Applied Geometry 60 5

Applied geometry broadens the knowledge of techniques to use in solving problems involving spatial relationships of points, lines, surfaces, and solids. Auxiliary views, true-size constructions, revolution, developments, cutting planes, graphical treatment of vectors, and classification of surfaces are included. Prerequisite: 5412 or 7512

5422 Construction Materials 60 4

This course covers the basic architectural and structural construction materials and their applications. Building materials will be considered for usability and cost feasibility.

5430 Architectural Design I (Residential) 180 8

This course covers the planning and design of a residence including size, space relationships and costs. A complete set of working drawings shall be the objective. Prerequisite: 5420

5431 and 7532 Applied Trigonometry 36 3

Trigonometry of right and oblique triangles, analytical trigonometry including vectors and equations. Prerequisite: 5412 or 7512

5432 Mechanical and Electrical Equipment 36 3

A brief introduction to the mechanical and electrical systems in a structure. Plumbing, heating and cooling and electrical systems will be studied. Mechanical and electrical drawings will be studied. Applied mathematics is also included.

5440 Architectural Design II (Commercial) 120 6

This course covers the planning and design of a motel including size, space relationships and costs. A complete set of working drawings shall be the objective.

5441 Specifications and Codes 60 5

This course covers contracts and specifications as they relate to plans, building codes and actual construction. Basic relationships between specifications and working drawings will be considered from a legal and working standpoint. Applied mathematics and communication skills are also included.

5442 and 7541 Technical Communications 60 5

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

5450 Architectural Design III (Institutional) 180 8

This course covers the planning and design of a school including size, space relationships and costs. A complete set of working drawings is the objective.

5451 Structural Design 36 3

This course covers statics and strength of materials. Vectors, stress, strain, and the elasticity of materials will be considered in the basic structural design problems. Also covers the properties of concrete and the placing of reinforcement and proportioning of concrete mixes. Design principles of beams, axially loaded columns, footings and prestressed beams are followed by design work. Also discussed are retaining walls, eccentrically-loaded columns and slabs.

5452 Estimating 24 2

The student is introduced to basic estimating procedures as they apply to the architectural construction industry and methods of construction. Prerequisite: 5441

COURSE DESCRIPTIONS

Hours Credits

5460 Architectural Design Team Project I 144 7

In order to provide an atmosphere of "the world of work," teams of students complete a set of working drawings. A job captain is chosen from among the most deserving students. This design includes commercial or residential design as approved by the instructor. Prerequisite: 5450

5461 Architectural Rendering 36 3

Architectural rendering covers introduction, history and review of pictorial types of drawing, study of light and color, rendering media, and application of different techniques and media by practical exercises.

5462 Architectural Business Principles 60 5

A course covering fundamental economics and basic principles of business and industry. Special emphasis is placed on the economic and business principles involved in the building construction and architectural design fields, including architect-client relationships, architect-contractor relationships, and the operating finances of the architectural organization.

5470 Architectural Design Team Project II 120 7

In order to provide an atmosphere of "the world of work," teams of students complete a set of working drawings. A job captain is chosen from among the most deserving students. This design includes light industry or office building design as approved by the instructor.

5471 Surveying and Measurements 60 4

This course covers the proper use and care of basic surveying equipment, including the level and transit. Field problems will be recorded in field notebooks and translated into records and drawings. Applied mathematics and communication skills are also included. Prerequisite: 5431

5472 and 7551 Human Relations 60 4

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

7521 Mechanisms and Machines 60 4

This course covers the principles of levers, gears, pulleys, bearings, and the basic laws of motion and energy. Special emphasis is placed on rotary and reciprocating or oscillating motion, as well as friction and its effects. Also studied are the basic systems of mechanical and scientific measurement.

7530 Technical Drafting III 144 7

A study of working drawings, detail and assembly drawings, use of handbook data, developments and intersections. Gears, cams, threads and fasteners, springs, and weldments are emphasized. Applied mathematics and communications skills are also included.

7531 Manufacturing Processes and Systems 60 5

A study of manufacturing processes and equipment selection and use of modern machine tools. Includes the study of the basic methods of fabrication used in modern manufacturing. Welding, electroforming, metallic coating, anodizing, plating and machine tool numerical control, and hydraulic systems, as used in industrial processes, are studied. Applied mathematics and communications skills are also included.

COURSE DESCRIPTIONS

Hours Credits

7540 Jig and Fixture Design Drafting 180 8

The study and design of Jigs and Fixtures, covering the basic types used in industry. Intensive procedures of detailing out of assembly. Special emphasis is placed on the theory of gaging; basic terminology ring, snap, flush, pin, thread, indicator and location gates. Dimensioning and tolerancing of gages. Applied mathematics and communication skills are also included. Prerequisite: 7530

7550 Tool Design Drafting 180 8

Design and application of tooling devices as used in machine shop production: Jigs, dies, fixtures, cutting tools, tool holders, gages, and gaging procedures are studied. Incorporation of standard fixture parts into tooling devices is emphasized. Concepts of stress and strain. Analysis of elementary stress distributions and deformations; torsion; stresses; shear and bending moment diagrams; section modulus. Introduction to rectilinear, curvilinear motion and angular rotation. Prerequisite: 7530

7560 Die Design Drafting 180 8

This course covers the planning and designing of dies, including piercing and forming, die cast and plastic mold dies. Design procedure for blanking, progressive, compound, piece-part-form-bend and draw dies. Standard company and handbook data. Through usage of detailing in Assembly. Prerequisite: 7530

7561 Industrial Economics 60 4

A course covering fundamental economics and basic principles of business systems. Everyday terminology is used and emphasis is placed on practical economics as opposed to the theoretical. Subjects covered include various types of business organization, costs and pricing, competition, money system, taxes, productivity and automation.

7570 Numerical Control and Data Processing 120 7

Introduces the concept of automatic process control. Fundamentals of feedback elements, transmission, control action, controlling elements, transmission, control action, controlling elements and final control elements as used in pneumatic, hydraulic and electrical systems. Special emphasis is placed on the relationship between digital devices and the automatic process control system. Includes a brief introduction to *Fortran* programming. Applied mathematics is also included. Prerequisite: 7550

7571 Manufacturing Planning and Estimating 60 4

This course applies recognized techniques and tests to measure value and thus eliminate unnecessary costs in design, development, and manufacturing engineering and research, industrial engineering, materials management, process and product control, facilities planning, plant engineering, and manufacturing information systems. Also includes a study of time and motion in the practical application area, using industrial practice as a basis for the establishment of rates. Applied mathematics and communication skills are stressed.

7572 Design Problems 60 4

Opportunity to integrate the knowledge previously acquired to design complete machines or sub-assemblies of machines. Analyze problems, gather data, sketch ideas on paper, do necessary mathematical calculations, make working drawings, and finally checks work. Encourage to use judgment and initiative to the maximum.

ELECTRONICS COMMUNICATIONS TECHNOLOGY

The field of electronics communications is vast and the need for trained men and women to operate, maintain, research and construct communications equipment is becoming more critical each year.

The field includes television, radio, radar, sonar, computers, spacecraft guidance, and control instruments. Electronic technicians work with engineers and scientists and do complex technical work.

This program provides an optional course for those students who wish to specialize in Radio and TV servicing instead of general communications electronics.

Skilled radio and television technicians use their technical knowledge of electrical and electronic parts and circuits to install and repair many types of consumer electronics products. In addition to radio and TV sets, this may also include other electronic products such as phonographs, hi-fidelity and stereophonic sound equipment, inter-communication equipment, tape recorders, and public address systems.

Most of their work involves diagnosing trouble in the equipment and making the necessary repairs and adjustments. They check and evaluate each possible cause of trouble, conduct routine checks and use electronic testing equipment to check suspected circuits.

Those technicians engaged in electronics servicing for consumer's in Indiana, must obtain a state license. The Radio and TV option in this program is specifically designed to equip the student with the knowledge and skills required for the state license examination. The remainder of the program is similarly designed to prepare the student to take both the 2nd class and 1st class FCC Radiotelephone license examinations.

Employment opportunities in the field of electronics are expanding rapidly. Opportunities can be found in industry, the service trades, utilities companies, communications, and federal, state and local government agencies.

ELECTRONICS COMMUNICATIONS TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

THE ELECTRONICS TECHNOLOGIES

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

		Hours	Credits
6412	Fundamental Electronics I	96	5
6413	Electronics Fabrication	96	4
6414	Electronics Math I	60	5
6423	Fundamental Electronics II	96	5
6424	Troubleshooting Fundamentals	96	4
6425	Electronics Mathematics II	60	5
6434	Electronics Circuits I	96	5
6435	Technical Communications	36	3
6436	AM-FM Radio Circuits	96	4
6437	Electronics Drafting	48	3
6445	Television Circuits	96	5
6446	Integrated Circuits and Special Semiconductors	60	3
6447	Magnetic Recording Systems	36	3
6448	Professional Standards & Business Practices	24	2*
6449	Troubleshooting Techniques	84	4
6453	Communications Electronics I	96	5
6454	Electronics Circuits II	96	4
6455	Electronics Mathematics III	60	5
6464	Communications Electronics II	96	5
6465	Human Relations for Technicians	48	3
6466	Technical Reporting & Oral Communication	60	4
6467	Physics For Electronics	48	3
6474	Data Communications Techniques	84	4
6475	Introduction to Data Processing	60	4
6476	Industrial Economics	36	3
6477	Basic Industrial Electronics	72	4

Total Contact Hours: 1,812

Total Credits: 102

*Additional Course taken only by students pursuing the Radio-TV option.

Radio-TV Option Contact Hours: 1,080

Radio-TV Option Credits: 60

ELECTRONICS TECHNOLOGY

The space industry and a rapidly developing industrial society, with its resulting emphasis on automation, brings job opportunities for people who are well-grounded in electrical and electronic theory and who have knowledge of manufacturing, installing, operating and maintaining electrical and electronic equipment. The electrical technician works with many types of electrical controls and machines. Electronics technicians work with some of the above equipment as well as telemetry and guidance systems, computers

and specialized electronics equipment used throughout business and industry.

This program provides an optional course for those students who wish to specialize in industrial electricity and commercial wiring.

All industrial plants need craftsmen who can service electrical equipment and machinery. A large part of the industrial electrician's work is preventive. They periodically inspect equipment to find and repair defects before breakdowns occur. When trouble does develop, they repair the faulty circuit or equipment so that production can continue. Their duties include replacing wiring, fuses, circuit breakers, coils and switches. They also may do minor installation work.

In large plants, an industrial electrician may be responsible for the maintenance of a particular type of equipment such as motors or transformers. In a small plant, the technician usually is responsible for all types of electrical repair work. While doing repair or installation work, they may connect wires by splicing or by using mechanical connectors. They may measure, cut, bend, thread and install conduits through which wires are run to outlets, panels and boxes. They also may adjust equipment controls and check and adjust instruments.

The general electronics technician works with complex industrial control systems, servomechanisms, specialized monitoring instruments, and remote and tape controlled processing systems. They are also responsible for installing, adjusting, and maintaining digital equipment and computer controlled equipment and systems.

ELECTRONICS TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
6513 Fundamental Electronics I	96	5
6514 Electronics Fabrication	96	4
6515 Electronics Math I	60	5
6524 Fundamental Electronics II	96	5
6525 Electro-Mechanical Instrumentation	84	5
6526 Electronics Mathematics II	60	5
6535 Electronics Circuits I		
or		
6536 Industrial and Commercial Wiring	96	5(6)

	Hours	Credits
6537 Technical Communications	36	3
6538 AC/DC Machines & Controls	72	4
6539 Electronics Drafting	48	3
6543 Industrial Electronics I	96	5
6544 Integrated Circuits and Special Semiconductors	60	3
6545 Magnetic Recording Systems	36	3
6546 Electrical Maintenance	60	4
6553 Industrial Electronics II	96	5
6554 Electronics Circuits II	96	4
6555 Electronics Mathematics III	60	5
6562 Digital Principles & Circuits I	96	5
6563 Human Relations For Technicians	48	3
6564 Technical Reporting & Oral Communication	60	4
6565 Physics For Electronics	48	3
6574 Industrial Electronics III	60	3
6575 Introduction to Data Processing	60	4
6576 Industrial Economics	36	3
6577 Digital Principles & Circuits II	96	5

Total Contact Hours: 1,752

Total Credits: 103

*Alternative Course taken only by students pursuing the Electricity option.

Electricity Option Total Contact Hours: 744

Electricity Option Total Credits: 45

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the electronics industry.

6412 and 6513 Fundamental Electronics I 96 5

A study to provide a working knowledge of electrical principles and laws in DC and AC circuits. Voltage, current and resistance relationships are stressed on an applied basis. Impedance, reactance and phase relationships are introduced on an applied basis. Component identification and the proper use of lab test equipment is stressed heavily.

6413 and 6514 Electronics Fabrication 96 4

An in-depth laboratory course to provide practical experience in the techniques of electronics construction, fabrication, and assembly, with emphasis on the proper care and use of shop tools and test equipment, and special attention to applicable O.S.H.A. rules and regulations.

6414 and 6515 Electronics Mathematics I 60 5

Introductory mathematics for basic electronics, with emphasis on metric units, quantitative measurements, and the application of algebra to electronics equations.

6423 and 6524 Fundamental Electronics II 96 5

A study of resonance, filters, AC circuits, vacuum tubes, transistors and their relationships to audio amplifiers and oscillators, as well as power supplies. Laboratory work emphasizes the practical application of electronics theory in construction, testing and analysis of AC circuits, power supplies and basic vacuum tube and transistor amplifiers.

COURSE DESCRIPTIONS

6424 Troubleshooting Fundamentals 96 4

The techniques of logical troubleshooting of electronic circuits and simple systems will be studied. Emphasis will be placed on systematic diagnostic methods. Further experiences is gained in the proper use of shop test equipment. AM and FM radios are introduced at the "block diagram" level, and discussed as systems.

6425 and 6526 Electronics Mathematics II 60 5

The application of algebra and basic trigonometry to electronics equations, formulas and graphs, with special emphasis placed on impedance and resonance calculations.

6434 and 6535 Electronics Circuits I 96 5

A study of active device theory, characteristics, and applications. Includes the study of both solid-state and vacuum tube, oscillators and amplifiers. Special emphasis is placed on radio receiver principles and circuits. Includes a working knowledge of field effect transistors.

6435 and 6537 Technical Communications 36 3

Fundamental training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data and manuals, and reading for understanding is stressed. Emphasis is placed on concise presentation of technical materials.

6436 AM-FM Radio Circuits 96 4

A background in techniques of solving electronic problems. Applications and calibration techniques of electronic circuits, solution of electronic problems, and proper use of test equipment.

Includes the principles of modulation, receiver principles, the superheterodyne receiver, receiver circuits, FM stereo and multiplex, test equipment and the introductory study of television principles. Prerequisite: 6424

6437 and 6539 Electronics Drafting 48 3

The techniques used in diagramming electronics circuits and systems will be studied. Emphasis will be placed on both the proper techniques for drawing diagrams, as well as skill in reading and interpreting diagrams and electrical blueprints.

6445 Television Circuits 96 5

An in-depth study of television circuitry, with emphasis on the principles of cathode ray tubes, scanning and synchronizing methods, and video amplification. Includes the principles of antennas and transmission lines. Also includes a specialized study of the principles and circuits used in solid-state and color TV receivers, emphasizing both the differences and similarities between these circuits and those previously studied. Prerequisite: 6436

6446 and 6544 Integrated Circuits and Special Semiconductors 60 3

An introduction to the theory and operation of semiconductor devices other than the bipolar transistor. Topics to be covered include Zener and light emitting diodes, FET's and other special semiconductor devices. Also includes an introduction to the various classifications and categorizations of linear integrated circuits. Additionally, methods and techniques of integrated circuits will be covered. Basic digital techniques are also introduced. Prerequisite: 6434 or 6535

6447 and 6545 Magnetic Recording Systems 36 3

Operational principles of both audio and video tape recording systems will be covered. Maintenance, alignment and operation will be stressed. Mechanical troubleshooting will be introduced. Special emphasis is placed on cassette and cartridge systems.

COURSE DESCRIPTIONS

6448 Professional Standards and Business Practices 24 2

This course is an in-depth study of those elements a technician should know to become a certified technician. Special emphasis is placed on the techniques and procedures for proper servicing required for successful completion of the state license examinations. Additional emphasis is placed on communications skills and successful service shop operation. Co-requisite: 6445

6449 Troubleshooting Techniques 84 4

Provide an advanced level of skill development in diagnostic procedures, with emphasis on service procedures and installation and adjustment of color and solid-state TV receivers. Also includes a general study of test equipment repair and maintenance. Lab work includes practical experience with both transistor and color TV receivers. Prerequisite: 6445 or 6436

6453 Communications Electronics I 96 5

Covers properties and propagation of radio waves, tuning circuits, modulators and oscillators, receiver and transmitter alignment techniques, two-way radio systems, and motor generator power sources. Special emphasis is placed on the circuits and principles required for successful completion of the FCC Second Class License examination.

6454 and 6554 Electronics Circuits II 96 4

A comprehensive treatment of pulse and logic circuit fundamentals. Basic waveforms of the nonsinusoidal variety frequently used in pulse and logic circuit work. Analysis techniques of pulse and switching circuitry. Other topics are: Superposition Theorem, Thevenin's Theorem, Norton's Theorem, and Kirchhoff's Loops.

6455 and 6555 Electronics Mathematics III 60 5

A comprehensive treatment of computer arithmetic and Boolean Algebra fundamentals. Logic arithmetic and its relationships with the binary number system. Includes algebra and analytic geometry and their application to complex circuits, along with an introduction to integration and differentiation.

6464 Communications Electronics II 96 5

A study of transmission lines, antennas, television transmitters, single-sideband techniques and an introduction to microwaves in communications. Special emphasis is placed on the circuits and principles required for successful completion of the FCC First Class License examination.

6465 and 6563 Human Relations For Technicians 48 3

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and personal morale in working situations.

6466 and 6564 Technical Reporting and Oral Communication 60 4

Skills for critical examination of electronics data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials, graphs, diagrams, and circuit specifications. Oral communication is also stressed.

6467 and 6565 Physics For Electronics 48 3

An introduction to physics and its applications to the propagation of light and sound, the production, conduction and effects of heat; and their applications to electrical circuits.

COURSE DESCRIPTIONS	Hours	Credits
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6474 Data Communications Techniques	84	4
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An examination of the use of both radio and landlines for the transmission of digital pulses and other data to remote locations. Includes a study of the various pulse modulation and multiplex techniques, and their application to microwave and radar systems, along with an introduction to Masers and Lasers. Prerequisite: 6454

6475 and 6575 Introduction to Data Processing	60	4
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This course is designed to provide the student with a general overview of computer concepts and how they are employed in implementing data processing problem solutions. The tasks and tools associated with problem solving, a study of computer components and data processing techniques, along with an introduction to computer programming are included in the course. Prerequisite: 6454 or 6554

6476 and 6576 Industrial Economics	36	3
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A course covering fundamental economics and basic principles of business systems. Everyday terminology is used and emphasis is placed on practical economics as opposed to the theoretical. Subjects covered include various types of business organizations, costs and pricing, competition, money system, taxes, productivity and automation.

6477 Basic Industrial Electronics	72	4
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An examination of industrial relay circuits, electronic power supplies including power rectification, motor control, and basic servomechanisms. Analysis of the operating characteristics of representative industrial control circuits.

6525 Electro-Mechanical Instrumentation	84	5
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A study of electrical and mechanical devices and transducers, relays, circuit breakers, solenoids, thermo-couples, photocells, piezoelectric crystals, and their methods of control and measurement. Special emphasis is placed on the proper use of lab and shop test equipment for trouble-shooting purposes. Prerequisite: 6514

6536 Industrial and Commercial Wiring	96	6
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Wiring methods and materials are introduced in conformance with the national electrical code. The basic fundamentals of AC distribution and control are covered in depth. Laboratory work involves the use of typical hand and power tools used in the wiring of residential and commercial buildings. Major emphasis is placed on electric radiant heat circuits, and motor controls and installations. Prerequisite: 6514

6538 AC/DC Machines and Controls	72	4
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Characteristics of generators and motors are introduced. Motors and control methods are studied and compared with

COURSE DESCRIPTIONS	Hours	Credits
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emphasis on full and reduced-voltage magnetic controls. Multispeed, variable speed, synchronous, and wound rotor are among the types of motors studied. Electrical mechanical braking and clutches are covered. Solid state motor control is introduced. Prerequisite: 6525

6543 Industrial Electronics I	96	5
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An intensive study of the effects of R-L-C circuits, and transistor and vacuum tube circuits, on square-waves, sinusoidal waveforms and pulses. Emphasis is placed on control of gaseous tubes and semi-conductors with emphasis on the Silicon Controlled Rectifier, motor controls, and an introduction to servomechanisms. Prerequisite: 6525

6546 Electrical Maintenance	60	4
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Preventive electrical maintenance programs are developed for typical industrial and commercial situations. Related meters and test equipment are studied both for preventive and troubleshooting applications. Protection of life, property, and production are emphasized as primary goals. Special emphasis is placed on the operation and maintenance of test equipment. Prerequisite: 6538

6553 Industrial Electronics II	96	5
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A continuation of Industrial Electronics I (6543), systems and circuits with an in-depth study of electronic controls. Main emphasis will be in the area of solid state controls, process controls and servomechanisms. Also includes a study of calibration techniques, and the use of standards for the measurement and specification of tolerances.

6562 Digital Principles & Circuits I	95	5
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Modern Digital Logic Circuits and Systems, with emphasis on arithmetic Circuits, Multivibrators, Counters, Clocks, and Registers. Special emphasis is placed on binary codes and the practical application of Boolean Algebra. Prerequisite: 6554

6574 Industrial Electronics III	60	3
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An advanced study of transistors, diodes, FET's, SCR's, UJT's, SCS's and integrated circuits. With an introduction to design with these devices. Emphasis is placed on operational amplifiers, differential amplifiers, phase locked loops, and loadline analysis of transistor amplifiers for voltage and power, temperature effect and frequency response.

6577 Digital Principles and Circuits II	96	5
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Modern computer circuits and input/output devices. Switching circuits, circuits for long-time and short-time storage, types of organization for storage systems and control systems, D/A and A/D conversion, and magnetic devices and systems.

HEATING AIR-CONDITIONING AND REFRIGERATION TECHNOLOGY

The growing use of air conditioning (heating and cooling) and refrigeration equipment systems throughout the nation provides many job opportunities for the skilled technicians who install and repair such equipment in office buildings, factories, homes, food stores, restaurants, theatres, hospitals, churches and other establishments.

The field includes control of all factors for human comfort in the home, office, and in industry. Humidity, temperature, and clean air control for manufacturing processes, printing, food preservation, computers, medicine and surgery are creating many opportunities for the trained technician.

A great number of these skilled people are employed by business concerns which specialize in the repair and maintenance of commercial, industrial and home air-conditioning (heating and cooling) and refrigeration equipment. Another important element involves conversion and modernization of obsolete installations.

There are also excellent opportunities for those who desire to establish their own business in this field. The heating air-conditioning and refrigeration technician is in a specialized field, much in demand and offering high pay.

In this program emphasis is placed on developing the student's understanding of the entire comfort control system, as well as acquiring skill in the installation and repair of each of its component parts. This prepares the graduate to work closely with design and layout engineers in determining total system specifications and costs.

HEATING, AIR-CONDITIONING AND REFRIGERATION TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
7112 Air-Conditioning & Refrigeration I	96	5
7113 Basic Electricity	96	5
7114 Basic Mechanics & Shop Techniques	96	5
7123 Air-Conditioning & Refrigeration II	96	5

	Hours	Credits
7124 Heating & Cooling Service I	96	4
7125 Motors & Controls	72	3
7126 Technical Mathematics I	48	4
7133 Heating & Cooling Service II	96	4
7134 Technical Mathematics II	48	4
7135 Electrical Circuits & Controls	72	3
7136 Psychrometrics, Air Movement and Ventilation	96	5
7143 Blueprint Reading	48	3
7144 Commercial Refrigeration I	96	5
7145 Heating and Cooling Service III	96	4
7146 Technical Communications	48	3
7153 Commercial Refrigeration II	84	4
7154 Duct Design and Installation I	96	5
7155 Specifications & Estimating	72	4
7156 Applied Physics	48	3
7162 Specialized Environmental Control Systems	96	5
7163 Duct Design & Installation II	84	4
7164 Human Relations	48	4
7165 Advanced Electronics Controls	60	3
7173 Industrial Economics	36	3
7174 Service Organization & Management	84	4
7175 Equipment Sales	72	4
7176 Applied Design Problems	84	4

Total Contact Hours: 2,064
Total Credits: 109

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the heating & air-conditioning field.

7112 Air Conditioning & Refrigeration I 96 5

This is a study of fundamentals applicable to all phases of air-conditioning (heating and cooling) and refrigeration. Included are: heat flow, temperature measurements, absolute temperature scales, temperature conversions, dimensions, weight and mass, pressure, density, work and energy, sensible and latent heat, Boyles Law, Charles Law, humidity, elementary mechanical refrigeration, basic refrigeration systems, and an introduction to terms used in this industry.

COURSE DESCRIPTIONS	Hours	Credits
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7113 Basic Electricity	96	5
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A basic study of electricity to include the structure of matter, electron theory of current flow, Ohm's Law (current, voltage, resistance), current voltage and resistance measurements, and the proper use of electrical measuring instruments of popular types. Also covers, simple series and parallel circuits, complex circuits, switching with single pole and double pole switches, double-throw switches, 3-way switches, multiple-load switches, fusing, types of current, magnetism, and transformers.

7114 Basic Mechanics & Shop Techniques	96	5
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This course is to acquaint the student with the tools and materials used in AC and refrigeration; types of tubing, precautions in handling, cutting, flaring and connecting tubing; use of special tools, swaging, joining tubing of different sizes; proper use of torch for annealing, soldering and brazing; cutting and threading pipe, hand tools, gauges, hardware, oil, refrigerants and safety precautions. Also includes basic mechanics and a study of the physical properties of matter and energy, Archimedes' principle, measurement of heat and co-efficients of heat.

7123 Air Conditioning & Refrigeration II	96	5
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This is a study of the compression system used in mechanical refrigeration and air-conditioning, to include: laws of refrigeration, typical compression cycle, compressor construction and variations, condensers evaporators and variation, liquid receivers, refrigerant metering devices, installation, adjustment, testing, precautions and service procedures, refrigerants and identification, domestic systems and mechanisms, servicing the domestic refrigerator and freezer.

7124 Heating and Cooling Service I	96	4
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This course is to acquaint the student with the different types of equipment that are used in residential heating and air-conditioning. These topics are to be covered; types of systems, types of heating and humidifying systems, heating and humidifying equipment, coal furnaces, fuel oil and oil furnaces, oil burners, gun type burners, oil pumps, electrical ignition, gun type burner installations, gas furnaces, gas burners, pilot lights, gas burner installation, warm air heating systems, hot water heating systems and humidifiers.

7125 Motors and Controls	72	3
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This is a study of controls and motors to include: capacitance, inductance, motor types and applications, starting circuits, motor protection, motor testing and service, current, potential and thermal relays. Prerequisite: 7113

7126 Technical Mathematics I	48	4
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This is a math course for service technologies. Topics included are: decimal fractions, and common fractions, percents, ratios and, proportions; measuring-including the metric system; squares and square roots of numbers, signed numbers, algebraic notation; adding, subtracting, multiplying, and dividing algebraic expressions.

7133 Heating and Cooling Service II	96	4
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Because definite service procedures are a part of the heating and cooling service mechanics practices, this course adds systematics of trouble shooting, identifying and correcting types of defective operations in gas, oil and electric, heating and cooling systems and their associated controls.

7134 Technical Mathematics II	48	4
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This is a continuation of the math course for service technologies. Topics included are: algebra, simple linear equations, plane figures, solid figures, and solving right triangles.

COURSE DESCRIPTIONS	Hours	Credits
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7135 Electrical Circuits and Controls	72	3
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This is a study of electrical circuits to include: an introduction to electronic circuit components and applications, power transformer connections and resulting voltages, range and differential adjustments, semi-automatic and automatic defrost controls, wiring of controls, and motor testing and service. Prerequisite: 7113

7136 Psychrometrics, Air Movement and Ventilation	96	5
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This course is an introduction to air-conditioning factors affecting body comfort. Air cycle and comfort cooling, refrigeration cycle and comfort cooling, psychrometrics and psychrometric charts, and estimating cooling and heating loads. Also a study of special problems in the area of air handling for heating and ventilation, with special attention given to air duct systems, fans and blowers.

7143 Blueprint Reading	48	3
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A specialized course for heating, air conditioning, and refrigeration students. Emphasis will be placed on reading blueprints common to the trade; blueprints of mechanical components, assembly drawings, wiring diagrams, schematics, and floor plans; as well as developing floor plans and shop sketches. The student will also make tracings of floor plans and layouts of air conditioning systems.

7144 Commercial Refrigeration I	96	5
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This is an introduction to commercial refrigeration; temperature and humidity requirements for product storage, calculations of cooling load, and commercial application, equipment selection, refrigerant line sizing, multiplex refrigeration systems, cooling towers, evaporators, and remote air-cooled condensers. Prerequisite: 7123

7145 Heating and Cooling Service III	96	4
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This course will include commercial systems, installing and servicing. A number of different items will be covered such as, heat pumps and their applications, electric heating principles, application of electric heating, building design for electric heating, forced conduction resistance heating, supplementary electric heating, thermostats, relays, and the controls that are necessary to operate these types of equipment.

7146 Technical Communications	48	3
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Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

7153 Commercial Refrigeration II	84	4
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An advanced study of commercial systems, their installation, and service. Special emphasis is placed on defrosting systems, time clocks, ultra low-temperature systems, ice makers; installation practices, service diagnosis, and maintenance techniques used in commercial refrigeration.

7154 Duct Design and Installation I	96	5
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This course covers the calculations and problems, of air distribution, duct design, fans, filters, diffusers, electric and pneumatic controls. Also included is the study of insulation material, chimney and flues. Laboratory work will include use of pitot tubes, anometer, manometers, and delayed gages in checking duct systems for heating and cooling operations. The student will progress rapidly into the practical layout problems met in heating, ventilating, and air conditioning. Prerequisites: 7136, 7143

114/ HEATING, AIR-CONDITIONING AND REFRIGERATION TECHNOLOGY

COURSE DESCRIPTIONS

7155 Specifications and Estimating 72 4

This is the study of the principle practices and procedures involved in the present operation of heating and air conditioning system. Special emphasis is placed on understanding and interpreting manufacturers' catalogs and data sheets, the coordinated selection of components for complete heating and cooling installation, estimating of both material and labor cost for complete installation, as well as costs for service on existing systems.

7156 Applied Physics 48 3

This is a course in general physical science with emphasis on heat, light, and sound. Also includes the laws and applications of mechanics and motion.

7162 Specialized Environmental Control Systems 96 5

This will be a study of special systems now in use to include: Expendable refrigeration systems, multistage systems, cascade systems; also cryogenics, vortex tube cooling and heating systems, steam jet systems, and an in depth study of technical characteristics to include weight and specific heat of substances, heat transfer coefficients, conversion equivalents, capacitors and power factor, power factor control, decibels, noise considerations, special handling of refrigerants. Emphasis is given to safety codes for mechanical refrigeration.

7163 Duct Design and Installation II 84 4

This course covers the calculations and problems of duct design. There are demonstrations and practice in carefully designing air ducts for the transmission of air in a forced-air heating, ventilation or air conditioning system from the standpoint of economy and proper functioning; including the study of the basic elements of sheet metal work as applied to the design, layout, and construction of heating and cooling duct work.

7164 Human Relations 48 4

In this course, the student develops effective skill necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

COURSE DESCRIPTIONS

7165 Advanced Electronics Controls 60 3

A study of electronic temperature sensing and control circuits and components. Topics include; thermoelectric generators, thermocouples, thermistors, and photoelectric systems. Also includes SCR's TRIAC's and integrated circuits as applied to refrigeration and air conditioning control systems. Prerequisite: 7135

7173 Industrial Economics 36 3

A course covering fundamental economics and basic principles of business systems. Everyday terminology is used and emphasis is placed on practical economics as opposed to the theoretical. Subjects covered include various types of business organization, costs and pricing, competition, money systems, taxes, productivity and automation.

7174 Service Organization and Management 84 4

This course is to acquaint the student with the basic operation of a service business to include an understanding of employee non-technical responsibilities: record keeping and why it is essential to a profitable operation, how to keep adequate records, how to handle warranty service and parts records. Hidden cost involved and the effect on pricing of service and parts. Necessary insurance for protection of all parties concerned, theft, public liability, vehicle and fire protection. Accepted pricing and collection procedures compatible to good customer relations. A basic understanding of business profit and loss statements and the balance sheet, how to interpret and the need of this information for loans or credit.

7175 Equipment Sales 72 4

A course in salesmanship techniques and procedures. It analyzes marketing and product services and the role of the manufacturers representative. Also includes a study of contract sales and servicing.

7176 Applied Design Problems 84 4

An opportunity to integrate the knowledge and skills previously acquired to design complete air conditioning and refrigeration installations. Involves the analysis of the problem, gathering of the data, selection of equipment, mathematical calculations, and the production of working drawings.

INDUSTRIAL MAINTENANCE TECHNOLOGY

Specialization and complex design have been for many years dominant factors in the development of machinery and equipment for large industrial plants.

In the last few years there has emerged a heavy demand for the "generalist" who has a broad spectrum of skills which can be utilized in the installation and routine maintenance of many types of mechanical and electrical equipment. This need is most acute in the small and medium-sized industrial plants that identify their equipment maintenance needs as beyond the ability of the typical "handyman" but do not require the services of an entire team of specialists.

This program prepares the student to perform installation and general maintenance in three major areas; machine tools, heating and air-conditioning, and electrical wiring and equipment.

INDUSTRIAL MAINTENANCE TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Prerequisites are identified in the course descriptions)

	Hours	Credits
7310 Industrial and Commercial Wiring	120	7
7311 AC/DC Machines and Controls	120	7
7320 Electrical Maintenance	120	7
7321 Machine Tool Process Fundamentals	120	7
7330 Machine Tools	120	7
7331 Machine Tool Electrical Circuits	60	3
7332 Technical Mathematics	60	5
7340 Machine Diagnosis and Repair	120	7
7341 Hydraulic and Pneumatic Systems	60	4
7342 Technical Communications	60	5
7350 Heating Principles	120	7
7351 Burner Service	60	4
7352 Physical Science	60	4
7360 Air Movement and Ventilation	96	6
7361 Industrial Refrigeration Principles	84	5
7362 Applied Geometry and Trigonometry	60	5
7370 Industrial Refrigeration Systems	84	5
7371 Industrial Heating-Cooling Systems Servicing	96	6
7372 Human Relations	60	4

Total Contact Hours: 1,680
Total Credits: 105

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the industrial maintenance field.

7310 Industrial and Commercial Wiring 120 7

Wiring methods and materials are introduced in conformance with the national electrical code. The base fundamentals of AC distribution and control are covered in depth. Also includes a study of electrical blueprint reading and electrical drafting fundamentals. Applied mathematics is included.

7311 AD/DC Machines and Controls 120 7

Characteristics of generators and motors are introduced. Motors and control methods are studied and compared with emphasis on full and reduced-voltage magnetic controls. Multi-speed, variable speed, synchronous, and wound-rotor are among the types of motors studied. Electrical-mechanical braking and clutches are covered. Solid state motor control is introduced. Applied mathematics is included. Co-requisite: 7310

7320 Electrical Maintenance 120 7

Preventive electrical maintenance programs are developed for typical industrial and commercial situations. Related meters and test equipment are studied both for preventive and trouble shooting applications. Protection of life, property, and production are emphasized as primary goals. Prerequisite: 7311

7321 Machine Tool Process Fundamentals 120 7

Benchmark, sawing, filing, layout, drilling reaming, and care and use of basic machines and measuring tools related to machine tool processes. Applied mathematics and communications skills are also included.

7330 Machine Tools 120 7

Lathe, drill-press, shaper, and milling machine operation is introduced, including work-holding methods and devices, proper set-ups, cutting and precision measuring tools. Fundamental machine shop requirements as to the use of the various gauges, measuring instruments and related tools, as well as applied mathematics and communications skills are also included.

7331 Machine Tool Electrical Circuits 60 3

This is a practical application course in machine tool wiring methods and design including circuit and conductor calculations, motor circuits and controls, machine tool hook-up and circuiting. The National Electrical Code is introduced as it applies to the field. Applied mathematics is also included. Prerequisite: 7320

7332 Technical Mathematics 60 5

Algebra is studied including the operations with signed numbers, variables, first degree equations, special products factoring and algebraic fractions. Slide rule techniques are emphasized throughout.

COURSE DESCRIPTIONS	Hours	Credits
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7340 Machine Diagnosis and Repair	120	7
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The student is instructed in the skills of machine tools commonly used to produce new and reconditioned parts for machines under repair. Proficiency is gained in the use of basic machine tools in repairing work and damaged components of machine tools in repair. Special emphasis is placed on safety precautions to be used when working on instruments, the set up of an instrument shop and shop procedures, calibration techniques and repair of electro-mechanical devices. Also includes specialized practice in computation for tool room equipment. Standard and special component parts, including use of catalogs is stressed. Prerequisite: 7330

7341 Hydraulic and Pneumatic Systems	60	4
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The fundamentals of fluid power and the components are covered as to principle, function, terminology, repair and use. Study of machine tool circuits is used to make application.

7342 Technical Communications	60	5
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Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed in concise presentation of technical materials.

7350 Heating Principles	120	7
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Introduction to air-conditioning-heating comfort systems; principles of combustion oil burners and their systems; gas burners and their systems; warm air, gravity and forced hot water systems; steam heating systems, electrical heating systems; heat pump heating systems. The various fuels used for heating and their characteristics are thoroughly discussed. Applied mathematics and communication skills are also included.

7351 Burner Service	60	4
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This course acquaints the student with oil, gas (natural bottled) and electric burners. Their adjustment and replacement as well as repair of the units is involved. Co-requisite: 7350

7352 Physical Science	60	4
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A study of properties of matter and mechanics includes the concepts of force, motion, work, energy and power; analysis of basic machines, mechanical advantages, efficiency and transmission of power.

7360 Air Movement and Ventilation	96	6
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A study of special problems in the areas of air handling for heating and ventilation. This includes problems in air duct design, psychometric problems of design and installation of equipment. There is special attention given to air duct systems, heat gains in ducts, resistance loss in duct systems, fans and blowers. Applied physics, mathematics, and communication skills are also included.

COURSE DESCRIPTIONS	Hours	Credits
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7361 Industrial Refrigeration Principles	84	5
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A study of the purpose, design, and operation of the mechanical refrigeration systems to develop an understanding of their theory. Included are: laws of heat flow; refrigerants; basic compressor construction and theory; gas laws; measurements of heat quantity and intensity; latent and sensible heat; basic evaporator construction; refrigerant controls; air cooled condensers; basic refrigeration cycle; open and hermetic type compressors; pressure temperature relationships and measurements.

7362 Applied Geometry and Trigonometry	60	5
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This course in geometry broadens the knowledge of techniques used in solving problems involving spatial relationships of points, lines, surfaces, and solids. Auxiliary views, true-size constructions, revolution, developments, cutting planes, graphical treatment of vectors, and classification of surfaces are included. Particular emphasis is placed on trigonometry of right and oblique triangles, analytical trigonometry including vectors and equations. Prerequisite: 7332

7370 Industrial Refrigeration Systems	84	5
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Introduction to commercial refrigeration; temperature and humidity requirements for product storage; calculation of heat load in commercial applications; equipment selection; refrigerant line sizing; condensing units and cooling coils; multi-plexed refrigeration systems; cooling towers, evaporative and remote air cooled condensers; defrosting systems and time clocks; ultra-low temperature systems; ice makers; installation practices, service diagnosis and maintenance techniques used in commercial refrigeration. Applied mathematics and communication skills are also included. Prerequisite: 7361.

7371 Industrial Heating-Cooling Systems Servicing	96	6
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An advanced study of design, trouble shooting and problems associated with large tonnage air-conditioning systems, and overall analysis and assessment of the installation for satisfactory operation. Special emphasis is placed on troubleshooting and wiring of control circuits and systems, as well as testing these phases. Topics include: electrical control of multi-plexed systems; trouble diagnosis and correction; control of cooling towers; evaporative condensers and remote air cooled condensers. Applied mathematics and communication skills are also included. Prerequisite: 7360

7372 Human Relations	60	4
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In this course the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

MACHINE TOOL TECHNOLOGY

The tools and equipment used by industry must be kept in good operating condition, and skilled workers who can maintain and repair these tools are needed throughout the country.

In addition, modern manufacturing procedures require the services of a well-trained machinist to operate and maintain machine tools at peak efficiency. This highly-skilled craftsman transforms a common piece of metal into an intricate part meeting precise requirements.

The planning and testing of machines and tools for performance, durability and efficiency provide a large area of work for machine tool technicians. In the testing procedure, they record data, make computations, plot graphs, analyze results and write reports. The technician occasionally makes recommendations for design changes to improve performance. The jobs often require skill in the use of test instruments, test equipment and gauges.

Some of the technician's time is spent in preventive maintenance by regularly inspecting the equipment, thus preventing trouble which could cause breakdowns later. The technician may keep maintenance records of the equipment served.

Mechanical aptitude and manual dexterity are important qualifications for this work. Machine Tool technicians may work in production departments, maintenance departments, tool rooms and job shops.

MACHINE TOOL TECHNOLOGY

Associate Degree

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units for the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

	Hours	Credits
7710 Basic Machine Tool Processes	180	8
7711 Physical Science	60	4
7720 Machine Tools I	120	7
7721 Drafting and Manufacturing Standards	60	4
7722 Applied Geometry and Trigonometry	60	5
7730 Machine Tools II	144	8
7731 Blueprint Fundamentals	60	4
7732 Hydraulic and Pneumatic Fundamentals	36	3
7740 Specialized Machine Tools	120	7
7741 Basic Metallurgy and Heat Treatment	60	5

	Hours	Credits
7742 Electrical Circuits	60	3
7750 Machine Tool Diagnosis and Repair	120	7
7751 Quality Control Techniques	60	4
7752 Technical Communications	60	5
7760 Numerical Control and Automatic Processing	144	8
7761 Strength of Materials	60	4
7762 Precision Measurement, Layout and Inspection	36	3
7770 Manufacturing Planning and Estimating	60	4
7771 Industrial Economics	60	4
7772 Human Relations	60	4
7773 Motion and Time Study	60	4
Total Contact Hours:	1,680	
Total Credits:	105	

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the machine tool industry.

7710 Basic Machine Tool Processes	180	8
Benchwork, sawing, filing, layout, drilling, reaming, care and use of basic machines and measuring tools related to machine tool processes. Applied mathematics and communications skills are also included.		

7711 Physical Science	60	4
A study of properties of matter and mechanics includes the concepts of force, motion, work, energy and power; analysis of basic machines, mechanical advantages, efficiency and transmission of power.		

7720 Machine Tools I	120	7
Lathe, drill-press, shaper, and milling machine operation is introduced, including work-holding methods and devices, proper set-ups, cutting and precision measuring tools. Fundamental Machine Shop requirements as to the use of the dividing head. Completed, hardened and ground V-block rests. Prerequisite: 7710		

7721 Drafting and Manufacturing Standards	60	4
This course includes drafting theory and practice with special consideration given to the standard practices of dimensioning, tolerancing, and notations of tooling components such as proper practices of revolving out of position, line elimination, sectioning and other related areas as they apply to drawings of castings, forgings and machine stock.		

7722 Applied Geometry and Trigonometry	60	5
Descriptive geometry broadens the knowledge of techniques to use in solving problems involving spatial relationships of points, lines, surfaces, and solids. Auxiliary views, true-size con-		

COURSE DESCRIPTIONS

Hours Credits

structions, revolution, developments, cutting planes, graphical treatment of vectors, and classification of surfaces are included. Particular emphasis is placed on trigonometry of right and oblique triangles, analytical trigonometry including vectors and equations. Prerequisite: 7710

7730 Machine Tools II 144 5

A continuation of Machine Tool set-up and operation, with special emphasis on surface and cylindrical grinding. The student also becomes accustomed to the use of various gauges, measuring instruments and related tools as well as hardness testing. Precision grinding, lapping, and micro-finishes are stressed. Applied mathematics and communications skills are also included.

7731 Blueprint Fundamentals 60 4

Machine shop blueprints are read and interpreted relative to dimensions, shapes, machining operations, fabrication and assembly. Basic mathematics is applied in solving shop problems. Develop ability in making sketches on the job without instruments. Two and three view drawings, auxiliary views, screw threads and summary problems.

7732 Hydraulic and Pneumatic Fundamentals 36 3

The fundamentals of fluid power and the components are covered as to principle, function, terminology, repair and use. Study of machine tool circuits is used to make application.

7740 Specialized Machine Tools 120 7

A further investigation and study of metal cutting and machine tool principles including differential indexing, gear cutting and helical and cam milling. Tracer template design and metric transposition are studied. Advanced machine tool processes in the varied areas, including special projects, machine tool maintenance and tool making. Applied mathematics and communication skills are also included. Prerequisite: 7730

7741 Basic Metallurgy and Heat Treatment 60 5

The fundamentals of thermodynamics and reactions that occur in metals subjected to various heat-treatment methods and techniques. Utilization of gas and electric furnaces and their controls are covered. Heat treatment principles as applied to ferrous and non-ferrous materials are covered. Properties of metals and tests to determine their uses. Chemical and physical metallurgy. Theory of alloys. Treatment for steels, special steels and cast iron. Powder metallurgy. Classification of metals. Applied mathematics and communication skills are also included.

7742 Electrical Circuits 60 3

This is a practical application course in industrial wiring methods and design including circuit and conductor calculations, motor circuits and controls, transformer and entrance layouts, illumination design, machine tool hook-up and circuiting. The National Electrical Code is introduced as it applies to the field. Applied mathematics is also included.

7750 Tool Design, Processing and Fabrication 120 7

In this course the student develops and demonstrates acquired skills in Mathematics, Tool Design, Processing and Machining. Using accepted tool design practices and standards, the student must originate and complete a set of detailed blueprints of an approved mechanism which transfers motion and force. As a further challenge, the student will build the mechanism using standard shop practices and skills. Prerequisites: 7731, 7740

COURSE DESCRIPTIONS

Hours Credits

7751 Quality Control Techniques 60 4

Emphasis is placed on the principles and techniques of quality control to fulfill the organizational objectives of completing the job correctly the first time. Topics covered include vendor-customer relationships, sampling inspections, process control and tests for significance. Emphasis is placed on an individual being able and qualified to determine what type of quality control is best for a particular tool engineering application.

7752 Technical Communications 60 5

Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

7760 Numerical Control and Automatic Processing 144 8

Introduces the concept of automatic process control. Fundamentals of feedback elements, transmission, control action, controlling elements and final control elements as used in pneumatic, hydraulic and electrical systems. Special emphasis is placed on the relationship between digital devices and the automatic process control system; the special tooling techniques required; the programming of tape controlled machines; and the applied mathematics required. Prerequisite: 7740

7761 Strength of Materials 60 4

This course covers the basic laws of statics as applied to the systems of coplanar force systems and friction. Strength of materials covers the properties of materials and the simple stresses and deformation of elastic bodies resulting from external forces. Tables of properties of engineering materials are used extensively. Analysis of simple and combined stresses relative to the properties of the materials to meet functional requirements.

7762 Precision Measurements, Layout and Inspection 36 3

A study of methods and techniques of applying precision measurements to the varied machine tool processes, including applications to production and quality control. Covered also are tolerance, fits and allowances. Interchangeability is considered in relation to inspection procedures along with gauge inspection where appropriate.

7770 Manufacturing Planning and Estimating 60 4

This course applies recognized techniques and tests to measure value and thus eliminate unnecessary costs in design, development, and manufacturing without affecting quality. It includes the establishment of lines of authority, duties and responsibility, and rules for charting an organization structure. Also reviewed are manufacturing engineering and research, industrial engineering, materials management, process and product control, facilities planning, plant engineering, and manufacturing information systems.

7771 Industrial Economics 60 4

A course covering fundamental economics and basic principles of business systems. Everyday terminology is used and emphasis is placed on practical economics as opposed to the theoretical. Subjects covered include various types of business organization, costs and pricing, competition, money system, taxes, productivity and automation.

COURSE DESCRIPTIONS**Hours Credits****7772 Human Relations****60 4**

In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

COURSE DESCRIPTIONS**Hours Credits****7773 Motion and Time Study****60 4**

A study of time and motion in the practical application area, using industrial practice as a basis for the establishment of rates. The subjects will include elemental breakdown sheets, leveling factors, variables, M.T.M. application, standard data, general purpose data, sampling study, direct and indirect standards, and graphical expression. Applied mathematics and communication skills are also included.

POLLUTION TREATMENT TECHNOLOGY

The need for trained personnel in the clean water field has reached an all time high, and is rapidly outstripping available training resources. Under the stimulus of grants provided by State and Federal governments, the expenditure for construction of municipal waste treatment plants has been accelerated. Treatment plants have grown larger and more complex, requiring additional and more highly trained operating staffs. Moreover, from all indications, industry, too, will greatly expand water pollution control programs in order to meet the requirements of the Water Quality Act of 1965. Without trained personnel, even the best waste treatment plant will fail to yield its full potential in improved water quality.

The impact of applied technological developments and changes in the field of water and wastewater treatments and the magnitude of the waste and trash-disposal problem have created the need for competent support personnel at the technician level. The technicians assist researchers, public health guardians, and plant operators. They also develop competency for other responsible positions in the general field of water usage and public health.

The water and wastewater technicians can function as a member of the team engaged in research or pilot plant development and operation; as an operator or assistant operator of water purification or wastewater-treatment facilities; as a member of the public health team; or as an assistant in designing operational facilities.

This program is designed to supply the student with a background of knowledge in the diverse areas of applied sanitation which relate to water and wastewater. It offers a firm foundation in microbiology and basic hydraulics and emphasizes subject areas such as sanitary chemistry and biology, water supply and wastewater collection, water purification, wastewater treatment, and water pollution control equipment. Installation and maintenance of plant equipment and instrumentation devices is an important part of the student's training.

POLLUTION TREATMENT TECHNOLOGY

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science, and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Courses with Roman Numerals must be taken in sequence)

		Hours	Credits
7910	Physical Science and Electricity	120	7
7911	Introduction to Water Pollution Control	60	4
7912	Technical Mathematics I	60	5
7920	Basic Hydraulics and Water Control	96	7
7921	General Chemistry and Microbiology	84	6
7922	Basic Drafting	60	4
7930	Sanitary Chemistry and Microbiology	84	6
7931	Technical Mathematics II	60	5
7932	Basic Surveying	60	3
7933	Community Relations	36	3
7940	Municipal Water and Wastewater Treatment	120	7
7941	Instrumentation and Controls	60	4
7942	Technical Communications	60	5
7950	Special Problems (Field Study)	120	6
7951	Industrial Water and Wastewater Treatment	60	4
7952	Contracts, Specifications, Codes and Estimates	36	3
7953	Applied Research	24	2

Total Contact Hours: 1,200
Total Credits: 81

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the environmental control field.

7910 Physical Science and Electricity 120 7

A study of properties of matter and mechanics includes the concepts of force, motion, work, energy and power; analysis of basic machines, mechanical advantages, efficiency and transmission of power; the concepts of magnetism and electrostatics, basic electric circuits, sources and effects of electric current, electromagnetic induction, alternating currents, generators and motors and the production and distribution of electric power.

7911 Introduction to Water Pollution Control 60 4

A general overview of the entire pollution problem relating each type of pollution, i.e., air, water, population, solid waste,

COURSE DESCRIPTIONS	Hours	Credits
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radiation, and noise, to each of the others. Pollution terminology and history are introduced, especially that of water and wastewater treatment.

7912 Technical Mathematics I	60	5
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Algebra is studied including the operations with signed numbers, variables, first degree equations, special products, factoring and algebraic fractions. Slide rule techniques are emphasized throughout.

7920 Basic Hydraulics and Water Control	96	7
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A course designed to familiarize the student with the elementary engineering aspects of water supply and distribution; and of wastewater collection, removal, and disposal. Includes an introduction to the study of closed conduit and open channel flow, including stream flow, subterranean flow, runoff, pump characteristics, and wave action.

7921 General Chemistry and Microbiology	84	6
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An introductory study of chemical operations, including atomic structure, chemical bonding, property of matter, solutions, and an introduction to organic chemistry. Microbiology is introduced with emphasis on microorganisms peculiar to water and wastewater, and related public health and stream sanitation problems. Applied mathematics and communications skills are also included.

7922 Basic Drafting	60	4
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A beginning course for students who have had little or no previous experience in drafting. The principal objectives are to provide an elementary understanding of: orthographic projection, isometric and oblique sketching, detail and assembly working drawings, principles and applications of descriptive geometry to drawings, plan, profile and topographic drawing, how to use handbooks and other resource materials. Interpretation of industrial sketches and prints is introduced.

7930 Sanitary Chemistry and Microbiology	84	6
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Theory and laboratory techniques for all control tests of water purification including: bacteriology, color, turbidity, pH, alkalinity, hardness, coagulations, chlorides, fluorides, iron, manganese, detergents, bactericides, and nitrates, the determination of solids, dissolved oxygen, organic nitrogen, volatile acids, and toxic metals in liquid media. The course includes stream studies and in-plant studies. Prerequisite: 7921

7931 Technical Mathematics II	60	5
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A continuation of algebra with emphasis on scientific notation, powers and roots. Also includes geometry and basic trigonometry.

7932 Basic Surveying	60	3
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A study of the elementary theory and practice of plane surveying including taping, differential and profile leveling, cross sections, earthwork computations; and transit, stadia, and transit-tape surveys.

7933 Community Relations	36	3
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In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals relate to an interdependent society. Special emphasis is designed to improve individual attitudes, productivity and morale in working situations. The specific aspects of public relations development and image maintenance are stressed.

COURSE DESCRIPTIONS	Hours	Credits
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7940 Municipal Water and Wastewater Treatment	120	7
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A study of basic principles of water purification including: aeration sedimentation, rapid sand filtration, chlorination, treatment chemicals, taste and odor control, bacteriological control, mineral control, design criteria, maintenance programs, and operational problems. New processes and recent developments are studied. Criteria, rules, regulations, forms, and records associated with the field are considered. Also emphasizes the elementary engineering aspects of the design, operation, and maintenance of wastewater treatment plants and includes specific topics on: design parameters for all processes; materials used and their purposes; type and operation of equipment; maintenance of plant and equipment and typical solutions to specific operational problems. Electrical wiring of motors and control circuits and their associated troubleshooting techniques are also studied. Prerequisite: 7911

7941 Instrumentation and Controls	60	4
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Hydraulic, pneumatic, mechanical, electrical and electronic control systems and components. Basic description, analysis, and explanation of operation. Typical performance characteristics, limitations on performance, accuracy, applications and their use in environmental control. Applied mathematics is stressed. Prerequisite: 7910

7942 Technical Communications	60	5
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Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

7950 Special Problems (Field Study)	120	6
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Selected field design and operations problems will be covered under job-simulated conditions, in order to gain final employment readiness and on-the-job experience.

7951 Industrial Water and Wastewater Treatment	60	4
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The special problems of industrial water and wastewater treatment are studied in this course, with emphasis given to the major classifications of liquid industrial wastes. Neutralization, equalization, and proportioning are covered in detail, as well as the removal of troublesome solids.

7952 Contracts, Specification, Codes and Estimates	36	3
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The basic principles and methods which are most significant in contract relationships; appreciation of the legal considerations in construction work; study of the National Building Code and local building codes; interpreting and outlining specifications; estimating both construction and operating costs for equipment and facilities; compliance with, and interpretation of, Federal EPA regulations.

7953 Applied Research	24	2
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The student will be expected to research an area of interest in the water and/or wastewater treatment area and present a paper regarding the research. Guest speakers will be invited to the classes to present lectures in their area of expertise.

WELDING TECHNOLOGY

Welding is one of the most common and most dependable methods of joining metal parts. Many parts used in the manufacture of automobiles, missiles and spacecrafts, airplanes, household appliances and thousands of other products are joined by welding.

Structural metal used in the construction of bridges, buildings and storage tanks often is welded. The welding process is used to repair broken metal parts.

Welders join the metal parts by applying intense heat and sometimes pressure. This melts the edges and allows the formation of a permanent bond. There are many different ways to weld, with electric arc, gas and resistance welding the three most important.

The principal duty of the welder is to control the melting by directing the heat from either an electric arc or a gas welding torch and to add filler metal where necessary to complete the joint.

Employment opportunities are available in the fabrication and building trades as well as in small shops doing maintenance work. Industries which need welders include utility companies, light and heavy metal manufacturing concerns, electric motor manufacturers, construction companies, mining concerns, farm and industrial equipment manufacturers, and truck and automobile manufacturers. In fact, almost all manufacturers who use metal need welders.

WELDING TECHNOLOGY

Technical Certificate

Students interested in enrolling in this program will have the opportunity for individual counseling. As an outcome of such counseling some students may be eligible for advanced standing as a result of previous training or job experience. Others may find it desirable to review mathematics, science and communications skills through individually prescribed units from the skills advancement studies.

PROGRAM COMPOSITION

(Prerequisites are identified in the course descriptions)

	Hours	Credits
8010 Gas Welding and Cutting	252	8
8011 Physical Science	108	4
8020 Arc Welding	192	6
8021 Basic Metallurgy	72	4
8022 Blueprint Interpretation	96	5
8030 Inert-Gas Welding	192	6
8031 Electrical Fundamentals	84	3
8032 Industrial Materials	84	5
8040 Production and Resistance Welding	192	6
8041 Welding Equipment Maintenance	96	3
8042 Technical Communications	72	5
8050 Welding Troubleshooting and Inspection	192	6
8051 Ultrasonic and Non-Metallic Welding	120	4
8052 Human Relations	48	4
Total Contact Hours:	1,800	
Total Credits:		69

COURSE DESCRIPTIONS

Hours Credits

Skills Advancement Units

Skills advancement provides individualized, self-paced, review instruction tailored to each student's individual needs, as determined by counseling, for entry into this program. The emphasis of the subject material is on communications skills, mathematics skills, and science, with supplementary material oriented toward the welding industry.

8010 Gas Welding and Cutting 252 8

This phase of the welding program is designed specifically to provide basic skills and fundamental knowledge in oxyacetylene welding. A major share of the class time is devoted to actual welding practice, including a detailed study of the techniques of making welds in all positions. Some instruction is given in brazing, cast iron welding, pipe welding, silver soldering and flame cutting. Lectures and discussion provide additional background information essential to a qualified welder. Applied mathematics and communications skills are also included.

8011 Physical Science 108 4

A study of properties of matter and mechanics includes the concepts of force, motion, work, energy and power; analysis of basic machines, mechanical advantages, efficiency and transmission of power.

8020 Arc Welding 192 6

This course covers the welding of ferrous metals and alloys utilizing electric welding methods and techniques and the carbon arc torch. Safety hazards and safe practices in arc welding are covered. Applied mathematics and communications skills are also included.

8021 Basic Metallurgy 72 4

The properties and uses of non-ferrous metals and alloys, production of iron and steel, composition and properties of plain carbon steel and alloying elements, selection of tool steel, iron carbon diagram, case hardening, destructive and non-destructive testing. Also includes the fundamentals of heat treatment and reactions that occur in metals subjected to various heat-treatment methods techniques. Utilization of gas and electric furnaces and their controls are covered.

8022 Blueprint Interpretation 96 5

Basic fundamentals of drawing interpretation is applied in the welding trade. Deals with welding symbols, their significance, welding structures, specifications and assembly drawings, interpretation of blueprints which show job procedure methods and their relation to drafting. Specific attention is given to representation of common machine processes, special forms of dimensioning, sections, and other advanced drafting and design principles. Applied mathematics is also included.

8030 Inert-Gas Welding 192 6

This phase of the welding program gives the student a thorough knowledge of the various welding processes particularly metallic shielded arc, tungsten inert gas, and metal inert gas welding. A major share of the class time is devoted to actual welding practice. Specific attention is given to detailed study of the techniques of making welds in all positions using the electric arc, TIG and MIG welding applications. Lectures and discussion provide additional background information essential to a qualified welder. Prerequisites: 8010, 8020

COURSE DESCRIPTIONS	Hours	Credits
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S031 Electrical Fundamentals	84	3
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A study of the relationship between voltage, current and resistance in electrical circuits, with emphasis on the use of high-current transformers in AC circuits. Special emphasis is placed on the production of heat as a result of current flow through resistance. Applied mathematics is also included.

S032 Industrial Materials	84	5
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Internal stresses and deformation of elastic bodies resulting from external forces are studied. Tables of properties of engineering materials are used extensively. Analysis of simple and combined stresses relative to the properties of the materials to meet functional requirements. Laboratory work involves strength, hardness and durability of common industrial materials. Applied mathematics and communication skills are also included. Prerequisite: S021

S040 Production and Resistance Welding	192	6
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An in depth study of the use of both gas and arc welding in manufacturing and repetitive production operations. Special emphasis is placed on resistance spot welding techniques. Prerequisite: S030, S031

S041 Welding Equipment Maintenance	96	3
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Construction, operation, maintenance, and troubleshooting of welding equipment will be covered. Evaluation of welding procedures and analyzing of the problems, recommendations and testing for improved welds will be covered. Applied mathematics is also included.

COURSE DESCRIPTIONS	Hours	Credits
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S042 Technical Communications	72	5
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Intensive training in clear, effective writing and speaking is provided to enable the student to form logical solutions for special and work-related problems and to present ideas in a persuasive manner. Skills for critical examination of technical data used in writing comprehensive reports are developed. Emphasis is placed on concise presentation of technical materials.

S050 Welding Troubleshooting and Inspection	192	6
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A study of the techniques for the evaluation and testing of welds and welding operations. Covered also are tolerance, fits, and allowances. Interchangeability is considered in relation to inspection procedures along with gauge inspection where appropriate. Applied mathematics and communications skills are also included. Prerequisite: S021

S051 Ultrasonic and Non-Metallic Welding	120	4
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An introduction to modern equipment and techniques utilized in the joining of non-metallic materials. Includes plastics, fiberglass, vacuum deposition, and dielectric heating for spot welding. Prerequisite: S011

S052 Human Relations	48	4
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In this course, the student develops effective skills necessary for understanding human motivation and behavior. This information is designed to help individuals succeed in an interdependent society. Special emphasis is placed on studies concerning human needs and behavior in business and industry and is designed to improve individual attitudes, productivity and morale in working situations.

COMMUNITY SERVICES AND CONTINUING EDUCATION

Programs to meet the specialized training needs of individuals, firms, and institutions are offered by Indiana Vocational Technical College through its Department of Community Services and Continuing Education. Each course is designed to meet the specific objectives and needs of the students and/or the co-sponsoring agency; therefore, the program length, meeting times and places, and mode of presentation will vary widely.

Financing of courses varies. Some courses are free, others require practical participation by the student, others are entirely paid for by sponsoring industries or employers. Numerous employers reimburse students who complete specific courses.

Community Services and Continuing Education courses fall into four broad categories:

1. *Personal Enrichment*

Courses to help individuals enrich their lives or to improve themselves professionally. Examples are:

CREATIVE WRITING
MOTORCYCLE MAINTENANCE
TECHNICAL WRITING
OUTBOARD MOTOR MECHANICS
SPEED READING, and
BASIC HOUSEWIRING

2. *Basic Skills*

Courses in basic academic skills necessary to handling occupational subjects. Many of these courses involve the College's Learning Resource Centers where students may work at their own pace with individualized instruction. Typical are:

ADULT BASIC EDUCATION FOR
MIGRANT WORKERS
ENGLISH LANGUAGE SKILLS
VOCABULARY DEVELOPMENT
ELEMENTARY ALGEBRA
MATH FUNDAMENTALS, and
GENERAL EDUCATION DEVELOPMENT
(G.E.D.)

3. *Public Service*

Public service courses are designed to meet the training needs of public and private agencies who serve the general public. These include:

AIR POLLUTION CONTROL
MUNICIPAL WASTEWATER TREATMENT
MUNICIPAL WATER TREATMENT
SANITARY LANDFILL OPERATIONS
OCCUPATIONAL SAFETY AND HEALTH
(OSHA)
FOOD SERVICE, and
METRIC SYSTEM SEMINAR

4. *Personal Development*

These programs are offered by the College and are often co-sponsored by industries and associations wanting to train new employees or to retrain present staff. Courses may be open to the public or may be available only to employees of the sponsoring firm. Personal development courses have included:

INDUSTRIAL WASTEWATER TREATMENT
BASIC WELDING FOR RELATED TRADES
AUTOMOTIVE AIR-CONDITIONING
SEMINAR
BIOCHEMISTRY FOR MEDICAL
LABORATORY TECHNICIANS
MANAGEMENT SEMINAR
CEMENT MASONS SAFETY
BASIC BLUEPRINT READING, and
SHOP MATH

The courses listed above are only a small sampling of Community Services courses Indiana Vocational Technical College offers. A prospective student is encouraged to contact the nearest IVTC regional institute for current listings. Employers may make arrangements with the College to offer courses to their employees or work with other employers to develop needed courses with the College.

Information On APPRENTICESHIP PROGRAMS At Regional Institutes

Apprenticeship programs are sponsored by labor and management and are jointly financed. The College provides facilities on a contractual basis for these programs.

The selection for apprenticeship training depends upon the number of apprenticeship openings available at the time you want to start training, and upon your qualifications as measured against those of other applicants.

The College cannot enroll students in apprenticeship programs. All applications *must* be made directly to the appropriate local apprenticeship committee or local union.

For information on apprenticeship opportunities, you can direct your inquiry to the local union, the contractor, the U. S. Department of Labor, Bureau of Apprenticeship and Training, the Indiana State Employment Service, or the Regional Institute of IVTC.

APPRENTICESHIP PROGRAMS	Region 2 South Bend	Region 4 Lafayette	Region 6 Muncie	Region 7 Terre Haute	Region 8 Indianapolis
Asbestos Worker					X
Brick Mason	X			X	X
Carpenter	X		X	X	X
Cement Mason					X
Electrician	X		X		X
Industrial Apprentice					X
Industrial Electrician	X				
Industrial Pipefitter	X				
Ironworker	X				
Lather					X
Machine Repair	X				
Millwright	X				
Operating Engineer		X			X
Painter	X				X
Patternmaker	X				
Plumber and Pipefitter	X			X	
Roofers	X				
Sheetmetal	X				X
Tool and Die	X				X

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IVY TECH ALUMNI ASSOCIATION

The Ivy Tech Alumni Association is an organization which offers former students the opportunity to:

1. Maintain communication between the College and the Alumnus.
2. Promote the continuing growth of the College.
3. Establish bonds of unity with fellow Alumni of the College.

Any former, regularly enrolled student of the College is a member of the Alumni Association. By making an annual contribution, an Alumnus is entitled to an active voice in the affairs of the Association. The state-wide Alumni Association presently has chapters at Gary, South Bend, Fort Wayne, Lafayette, Kokomo, Terre Haute, and Indianapolis. It is the intent of the Association to have chapters coincident with each Regional Institute so local interest can be maintained.

A quarterly publication provides Alumni with news about their Region, the other Regions of Ivy Tech, and the College in general.

Student loans and scholarships for worthy Ivy Tech students are anticipated as the Association matures.

INDIANA VOCATIONAL TECHNICAL COLLEGE

General Catalog 1975-76

INDEX

<i>Subject</i>	<i>Page</i>
Accounting Technology	15
Activities, Social	8
Administrative Staffs	133-149
Administrative, Secretarial	35
Admission Policy	3
Admission Requirements and Procedures	3
Affiliation	9
Agricultural Equipment Technology	87
Air-Conditioning, Heating and Refrigeration Technology	113
Alumni Association	151
Applied Fire Science Technology	91
Apprenticeship Programs	129
Architectural Drafting Technology	105
Attendance	6
Automotive Body Repair Technology	93
Automotive Service Technology	95
Board Chairman's Message	1
Bookstore	8
Building Construction Technology	99
Business Division	15-44
Business Management Technology	19
Cable Television Technology	101
Campus Locations	iv
Child Care Technology	59
Class Organizations	8
Clinical Laboratory Technology	61
Clubs	8
College Calendar	ii
College Colors	8
College Credit	6
College Expenses	3-4
College Personnel	131-149
Commercial Art Technology	45
Commercial and Industrial Photography	49
Community Services & Continuing Education	127
Comprehensive Employment Training Act (CETA)	6
Computer Programming	21
Continuum	11
Conduct	10
Counseling Service	9
Course Outlines	15-126
Culinary Arts Careers	63
Curricular, General	11-13

<i>Subject</i>	<i>Page</i>
Curricula Advisory Committee	11
Dental Assistant	67
Diesel Power Technology	103
Dismissal, Disciplinary	10
Divisional Structure	14
Electronics Communications Technology	109
Electronics Technology	109
Emergency Care Technician	69
Expenses	3-4
Faculty	9
Fees	3-4
Final Examination	7
Financial Aid	4-6
Financial Responsibility	8
G.E.D. Testing	11-12
General Information	8
Grading	7
Graduation, requirements for	9
Grants	5
Graphics and Media Division	45-57
Health Occupations Division	59-86
Heating, Air-Conditioning and Refrigeration Technology	113
Hotel-Motel Management Technology	25
Housing	7
Industrial Drafting Technology	105
Industrial Maintenance Technology	117
Industrial Management Technology	27
Information, General	8
Interior Design Technology	51
Instructional Policies	6-7
Intramural Sports	8
Ivy Tech Alumni Association	151
Learning Resource Center	12
Library	12
Library Resource Aide	53
Legal, Secretarial	39
Load, Maximum	7
Load, Normal	6-7
Loans	5
Lost and Found	8

<i>Subject</i>	<i>Page</i>
Machine Tool Technology	119
Marketing Technology	31
Medical Assistant	71
Medical, Secretarial	41
Messages	8
Obstetrical Technician	75
Office Hours	8
Operating Room Technician	77
Organizations, Student	7-8
Part-Time Programs	11
Placement	7
Pollution Treatment Technology	123
Practical Nursing	79
Printing Technology	55
Quality Point	7
Quarter Hour	6
Radiologic Technology	81
Regional Boards of Trustees	131-133
Regional Institute Locations	iv
Respiratory Therapy	85
Scholarships	5

<i>Subject</i>	<i>Page</i>
Secretarial, Administrative	35
Secretarial, Legal	39
Secretarial, Medical	41
Secretarial Sciences	35-42
Skills Advancement Courses	12
Social Activities	8
Social Service Technology	43
Societies, Professional and Trade	8
Special Courses	13
Sports, Intramural	8
Staff and Faculty	133-149
State Board of Trustees	131
Student Organizations	7-8
Table of Contents	iii
The College	2
The Curricula	11-126
Trade and Technical Division	87-126
Transfer Credit	3
Trustees, State Board of	131
Welding Technology	125
Withdrawal, Official	4
Work-Study Program	5

NOTES

NOTES

NOTES

